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Data Compilation for AGR-2 B&W UO₂ Compact Lot LEU11-OP2-Z

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This document is a compilation of characterization data for the candidate AGR-2 B&W UO₂ fuel compact lot LEU11-OP2-Z. The compacts were produced by ORNL for the Advanced Gas Reactor Fuel Development and Qualification (AGR) program for the second AGR irradiation test (AGR-2). This compact lot was fabricated using particle composite LEU11. LEU11 came from Babcock and Wilcox (B&W) coated particle lot G73H-10-93085B, which was an upgraded batch of TRISO-coated 500 μm nominal diameter, 9.6% low enriched uranium oxide kernels (LEU). The AGR-2 TRISO-coated particles consist of a spherical kernel coated with an $\sim 50\%$ dense carbon buffer layer (100 μm nominal thickness), followed by a dense inner pyrocarbon layer (40 μm nominal thickness), followed by a SiC layer (35 μm nominal thickness), followed by another dense outer pyrocarbon layer (40 μm nominal thickness). The kernels were also manufactured by B&W and identified as kernel lot G73AA-10-69308. Two data packages were submitted by B&W containing the acceptance testing results for the kernels and coated particles, these are identified by their lot numbers. A discussion on the coating of the B&W TRISO particles can also be found in INL report INL/EXT-09-16545. A data compilation of ORNL analysis of G73H-10-93085B can be found in ORNL/TM-2009/255.

The AGR-2 Fuel Specification (INL SPC-923) provides the requirements necessary for acceptance of the fuel manufactured for the AGR-2 irradiation test. Section 4.3 of SPC-923 provides the property requirements for the heat treated UO₂ compacts. The Statistical Sampling Plan for AGR-2 Fuel Materials (INL PLN-2691) provides additional guidance regarding statistical methods for product acceptance and recommended sample sizes. The procedures for characterizing and qualifying the compacts are outlined in ORNL product inspection plan AGR-CHAR-PIP-14. The inspection report forms generated by this product inspection plan document the product acceptance for the property requirements listed in section 4.3 of SPC-923. Prior to compacting, the overcoated particles are characterized per ORNL product inspection plan AGR-CHAR-PIP-11 to obtain data needed for calculation of compacting charge weight and matrix density. Riffing of compact charges is also covered by this procedure. Prior to overcoating, the TRISO particles are characterized per ORNL product inspection plan AGR-CHAR-PIP-10 to determine uranium content, obtain data needed for overcoating and compact fabrication, and obtain further data needed for calculation of matrix density. Riffing of overcoater charges is also covered by this procedure. This document contains all the inspection report forms and data report forms generated by these inspection plans.

In addition to the characterization data, this report also contains other records relevant to the fuel product acceptance. A history of the material flow and sample naming is included. The overcoating and compacting process is summarized, and a record of the materials used to make the matrix is included. A Certificate of Conformance and any applicable Nonconformance Reports are attached as Appendices.

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1 Material identification record for LEU11-OP2-Z compacts

Table 1-1 lists the materials used to make the LEU11-OP2-Z compacts, including intermediate batches and samples used for characterization. TRISO-coated particles were shipped from B&W to ORNL on May 18, 2009. Twenty four completed compacts were shipped to INL on October 28, 2009. Twelve compacts were retained at ORNL and 167 compacts were consumed at ORNL by the QC acceptance testing.

Table 1-2 lists the disposition of each compact.

Table 1-1: Material identification record for LEU11-OP2-Z compacts

Sample ID	Parent material	Notes
G73AA-10-69308	G73AA-10-59382 G73AA-10-59383 G73AA-10-59384 G73AA-10-59385 G73AA-10-59386 G73AA-10-59387 G73AA-10-59388	B&W kernel composite from 7 batches
G73H-10-93085B	G73AA-10-69308	B&W TRISO-coated particles
NP-B8488 NP-B8489 NP-B8490	G73H-10-93085B	823.4 g of particles from 93085B shipped to ORNL on 5/18/2009
LEU10	NP-B8488 NP-B8489 NP-B8490	TRISO-coated particles re-composited
LEU10-B01 LEU10-C01 LEU10-D01 LEU10-E01	LEU10	TRISO-coated particle characterization samples per PIP-09
LEU11	LEU10	TRISO-coated particles after sorting by roller-micrometer and methanol wash
LEU11-A01	LEU11	TRISO-coated particle QC archive
LEU11-B01 LEU11-C01 LEU11-D01 LEU11-E01 LEU11-F01 LEU11-G01	LEU11	TRISO-coated particle characterization samples per PIP-10
LEU11-Y##	LEU11	Charges for overcoating, numbered Y01 through Y39
RD13371	Asbury Graphite Mills	Natural graphite
KRB2000	SGL Carbon	Synthetic graphite
SC1008	Hexion	Durite resin lot LK9DA0008
RDKrS-060809 RDKrS-071009 RDKrS-072709 RDKrS-080409	64 wt% RD13371 16 wt% KRB2000 20 wt% SC1008	Matrix precursor batches
LEU11-OP1	LEU11-Y01 to LEU11-Y10 + RDKrS-060809 LEU11-Y11 to LEU11-Y23 + RDKrS-071009 LEU11-Y24 to LEU11-Y34 + RDKrS-072709 LEU11-Y35 to LEU11-Y39 + RDKrS-080409	Over-coated particle composite.
LEU11-OP1-B01 LEU11-OP1-C01	LEU11-OP1	Overcoated particle characterization samples
LEU11-OP2	LEU11-OP1 + RDKrS-080409	After sorting by roller-micrometer and re-overcoating some particles with RDKrS-080409
LEU11-OP2-A01	LEU11-OP2	Overcoated particle QC archive
LEU11-OP2-B01 LEU11-OP2-C01	LEU11-OP2	Overcoated particle characterization samples
LEU11-OP2-G###	LEU11-OP2	Compacts, numbered G001 through G220
LEU11-OP2-Z###	LEU11-OP2-G###	Compacts, numbered Z001 through Z203 One to one correspondence to G### recorded on DRF24C (section 7)

Table 1-2: Disposition of LEU11-OP2-Z compacts

Sent to INL	Consumed during QC analysis			
	LEU11-OP2-Z002	LEU11-OP2-Z056	LEU11-OP2-Z118	LEU11-OP2-Z173
LEU11-OP2-Z001	LEU11-OP2-Z002	LEU11-OP2-Z056	LEU11-OP2-Z118	LEU11-OP2-Z173
LEU11-OP2-Z029	LEU11-OP2-Z003	LEU11-OP2-Z057	LEU11-OP2-Z119	LEU11-OP2-Z174
LEU11-OP2-Z032	LEU11-OP2-Z004	LEU11-OP2-Z058	LEU11-OP2-Z120	LEU11-OP2-Z175
LEU11-OP2-Z034	LEU11-OP2-Z005	LEU11-OP2-Z059	LEU11-OP2-Z121	LEU11-OP2-Z176
LEU11-OP2-Z036	LEU11-OP2-Z006	LEU11-OP2-Z060	LEU11-OP2-Z122	LEU11-OP2-Z177
LEU11-OP2-Z065	LEU11-OP2-Z007	LEU11-OP2-Z061	LEU11-OP2-Z123	LEU11-OP2-Z178
LEU11-OP2-Z072	LEU11-OP2-Z008	LEU11-OP2-Z063	LEU11-OP2-Z124	LEU11-OP2-Z179
LEU11-OP2-Z075	LEU11-OP2-Z009	LEU11-OP2-Z064	LEU11-OP2-Z125	LEU11-OP2-Z182
LEU11-OP2-Z078	LEU11-OP2-Z010	LEU11-OP2-Z067	LEU11-OP2-Z126	LEU11-OP2-Z184
LEU11-OP2-Z079	LEU11-OP2-Z011	LEU11-OP2-Z068	LEU11-OP2-Z128	LEU11-OP2-Z185
LEU11-OP2-Z089	LEU11-OP2-Z012	LEU11-OP2-Z069	LEU11-OP2-Z129	LEU11-OP2-Z187
LEU11-OP2-Z098	LEU11-OP2-Z013	LEU11-OP2-Z070	LEU11-OP2-Z130	LEU11-OP2-Z189
LEU11-OP2-Z101	LEU11-OP2-Z014	LEU11-OP2-Z071	LEU11-OP2-Z131	LEU11-OP2-Z190
LEU11-OP2-Z106	LEU11-OP2-Z015	LEU11-OP2-Z073	LEU11-OP2-Z132	LEU11-OP2-Z191
LEU11-OP2-Z127	LEU11-OP2-Z016	LEU11-OP2-Z076	LEU11-OP2-Z134	LEU11-OP2-Z192
LEU11-OP2-Z133	LEU11-OP2-Z017	LEU11-OP2-Z077	LEU11-OP2-Z135	LEU11-OP2-Z194
LEU11-OP2-Z140	LEU11-OP2-Z019	LEU11-OP2-Z080	LEU11-OP2-Z137	LEU11-OP2-Z195
LEU11-OP2-Z150	LEU11-OP2-Z020	LEU11-OP2-Z081	LEU11-OP2-Z138	LEU11-OP2-Z196
LEU11-OP2-Z180	LEU11-OP2-Z021	LEU11-OP2-Z082	LEU11-OP2-Z139	LEU11-OP2-Z199
LEU11-OP2-Z181	LEU11-OP2-Z022	LEU11-OP2-Z083	LEU11-OP2-Z141	LEU11-OP2-Z200
LEU11-OP2-Z183	LEU11-OP2-Z023	LEU11-OP2-Z084	LEU11-OP2-Z142	LEU11-OP2-Z201
LEU11-OP2-Z188	LEU11-OP2-Z024	LEU11-OP2-Z086	LEU11-OP2-Z143	LEU11-OP2-Z202
LEU11-OP2-Z193	LEU11-OP2-Z025	LEU11-OP2-Z087	LEU11-OP2-Z144	LEU11-OP2-Z203
LEU11-OP2-Z197	LEU11-OP2-Z026	LEU11-OP2-Z088	LEU11-OP2-Z145	
	LEU11-OP2-Z027	LEU11-OP2-Z090	LEU11-OP2-Z146	
	LEU11-OP2-Z028	LEU11-OP2-Z092	LEU11-OP2-Z148	
	LEU11-OP2-Z030	LEU11-OP2-Z093	LEU11-OP2-Z149	
	LEU11-OP2-Z031	LEU11-OP2-Z094	LEU11-OP2-Z151	
	LEU11-OP2-Z033	LEU11-OP2-Z095	LEU11-OP2-Z153	
	LEU11-OP2-Z035	LEU11-OP2-Z096	LEU11-OP2-Z154	
	LEU11-OP2-Z037	LEU11-OP2-Z097	LEU11-OP2-Z155	
	LEU11-OP2-Z038	LEU11-OP2-Z099	LEU11-OP2-Z156	
	LEU11-OP2-Z039	LEU11-OP2-Z100	LEU11-OP2-Z157	
	LEU11-OP2-Z040	LEU11-OP2-Z102	LEU11-OP2-Z158	
	LEU11-OP2-Z041	LEU11-OP2-Z103	LEU11-OP2-Z159	
	LEU11-OP2-Z042	LEU11-OP2-Z104	LEU11-OP2-Z160	
Retained at ORNL	LEU11-OP2-Z043	LEU11-OP2-Z105	LEU11-OP2-Z161	
LEU11-OP2-Z018	LEU11-OP2-Z044	LEU11-OP2-Z107	LEU11-OP2-Z162	
LEU11-OP2-Z045	LEU11-OP2-Z046	LEU11-OP2-Z108	LEU11-OP2-Z163	
LEU11-OP2-Z062	LEU11-OP2-Z047	LEU11-OP2-Z109	LEU11-OP2-Z164	
LEU11-OP2-Z066	LEU11-OP2-Z048	LEU11-OP2-Z110	LEU11-OP2-Z165	
LEU11-OP2-Z074	LEU11-OP2-Z049	LEU11-OP2-Z111	LEU11-OP2-Z166	
LEU11-OP2-Z085	LEU11-OP2-Z050	LEU11-OP2-Z112	LEU11-OP2-Z167	
LEU11-OP2-Z091	LEU11-OP2-Z051	LEU11-OP2-Z113	LEU11-OP2-Z168	
LEU11-OP2-Z136	LEU11-OP2-Z052	LEU11-OP2-Z114	LEU11-OP2-Z169	
LEU11-OP2-Z147	LEU11-OP2-Z053	LEU11-OP2-Z115	LEU11-OP2-Z170	
LEU11-OP2-Z152	LEU11-OP2-Z054	LEU11-OP2-Z116	LEU11-OP2-Z171	
LEU11-OP2-Z186	LEU11-OP2-Z055	LEU11-OP2-Z117	LEU11-OP2-Z172	
LEU11-OP2-Z198				

2 Summary of acceptance test results for LEU11-OP2-Z

At the end of this section is the inspection report form IRF-14A associated with the compact lot LEU11-OP2-Z. This inspection report form also appears in section 7 of this compilation, accompanied by the associated data report forms (DRFs) showing the results of each individual measurement. The inspection report form summarizes the acceptance testing performed according to the product inspection plan AGR-CHAR-PIP-14. The information in this form covers all the property specifications listed in section 4.3 of the AGR-2 Fuel Specification (INL SPC-923, Rev. 3). The compact lot, LEU11-OP2-Z, did not meet all the requirements in section 4.3 of SPC-923, Rev. 3. A nonconformance related to a higher than allowed fraction of exposed uranium was determined by the program to be acceptable for the AGR-2 irradiation test. The final disposition of this compact lot was to “use as is” for the AGR-2 irradiation test. This disposition was documented on INL NCR-44791.

Table 2-1 is provided for quick reference. It gives the mean values of key variable properties of the compact lot, LEU11-OP2-Z. For standard deviations of the distribution of the measured values see the appropriate IRF or DRF. For discussions on the uncertainty in these values, see the associated data acquisition methods and data report forms.

Table 2-1: Quick reference table for key variable properties of LEU11-OP2-Z.

Property	Mean
Mean uranium loading (g U/compact)	0.993
Compact diameter (mm)	12.27
Compact length (mm)	25.13
Compact mass (g)	6.100
Compact matrix density (g/cm ³)	1.68
Impurity content	Table 2-2

The reported mean impurity levels for the fuel compacts, recorded on IRF-14A and IRF-14B, may be higher than the actual values. This is because the as-reported mean impurity levels do not reflect the fact that some of the measurements were at or below the mass spectrometry measurement threshold, and thus could not be differentiated from zero. For the purpose of the acceptance test, impurity values reported as threshold values (documented in the data report forms with the < symbol) are always assumed to be equal to the maximum possible value. In addition, each time a leach was performed, a blank run was also performed, where all the relevant wet chemistry steps in the leach-burn-leach procedure in AGR-CHAR-DAM-26R1 were performed without a compact present, in order to obtain background values for each analyzed impurity. If a measurable impurity value was obtained in the blank, then that value was subtracted from the measured value in each sample. However, if a threshold value was reported in the blank, then no background subtraction was performed. Table 2-2 shows the possible range for the measured impurities, where the upper limit is the as-reported mean and the lower limit is the possible minimum value calculated by accounting for the fact that values reported as threshold values could have been as low as zero. This range reflects the uncertainty in the measured impurity values due to the mass spectrometry measurement thresholds.

Table 2-2: Mean impurity levels for fuel compacts from LEU11-OP2-Z compact lot measured by deconsolidation leach-burn-leach technique.

Impurity	Measured impurity content ($\mu\text{g}/\text{compact}$)
Iron	0.13 - 2.75
Chromium	0.34 - 0.48
Manganese	0.000 - 0.133
Cobalt	0.000 - 0.113
Nickel	0.02 - 0.59
Calcium	34.29 - 35.16
Aluminum	42.69
Titanium	2.76 - 3.31
Vanadium	15.27 - 15.41

Table 2-3 is also provided for quick reference. It gives the binomial distribution calculated upper limit of the 95% confidence interval of the defect fraction for key attribute properties of the compact lot LEU11-OP2-Z. In other words, these values are the lowest tolerance limits for which the compact lot would be deemed acceptable at 95% confidence, based on the particular sample that was measured. Also listed in the table are the actual number of defects observed and the number of particles analyzed. Note that, in the cases of the defective SiC and OPyC fractions, zero defects were observed. The defect fractions listed in the table for these cases are limited by the number of particles measured and the actual defect fraction could be much lower.

Table 2-3: Quick reference table for key attribute properties of LEU11-OP2-Z.

Property	Observed Number of Defects/ Number of Particles Analyzed	95% Confidence Defect Fraction
Uranium contamination fraction	3/246840	$\leq 3.2\text{E-}5$
Defective SiC coating fraction	0/123420	$\leq 2.5\text{E-}5$
Defective IPyC coating fraction	1/61710	$\leq 7.7\text{E-}5$
Defective OPyC coating fraction	0/1543	$\leq 2.0\text{E-}3$

It is also interesting to note the increase in pyrocarbon anisotropy due to compact heat treatment. The diattenuation of the IPyC increased from 0.0111 ± 0.0009 to 0.0157 ± 0.0012 (1.0334 ± 0.0027 to 1.0471 ± 0.0036 in terms of effective BAfo). The diattenuation of the OPyC increased from 0.0073 ± 0.0004 to 0.0122 ± 0.0005 (1.0219 ± 0.0012 to 1.0365 ± 0.0016 in terms of effective BAfo).

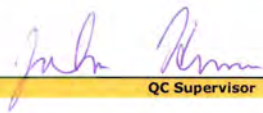
Inspection Report Form IRF-14A: AGR-2 UO2 Fuel Compact Lots

Procedure:	AGR-CHAR-PIP-14 Rev. 0
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers of compacts available for irradiation test (pending acceptance):	001 018 029 032 034 036 045 062 065 066 072 074 075 078 079 085 089 091 098 101 106 127 133 136 140 147 150 152 180 181 183 186 188 193 197 198

Property	Measured Data				Specification	Acceptance Criteria	Acceptance Test Value	Pass or fail	Data Records
	Mean (x)	Std. Dev. (s)	Measurements (n)	k or t value	INL SPC-923 Revision 3				
Uranium loading (gU/compact)	0.993	0.006	6	2.015	1.00 ± 0.05	A = $x - ts/\sqrt{n} \geq 0.95$ B = $x + ts/\sqrt{n} \leq 1.05$	0.988 0.997	pass pass	DRF-25
Compact diameter (mm)	See DRF-24				12.22 - 12.46	All available for irradiation test meet specification	See DRF-24	Pass	DRF-24
Compact length (mm)					25.02 - 25.40				
Compact matrix density (g/cm ³)					≥ 1.45				
Iron content outside SiC (µg/compact)	2.75	0.56	16	1.753	mean ≤ 25	B = $x + ts/\sqrt{n} \leq 25$	3.0	pass	IRF-14B DRF-26
				3.463	dispersion ≤ 0.01 ≥ 100	D = $x + \sqrt{3}ks < 100$	6.1	pass	
Chromium content outside SiC (µg/compact)	0.48	0.13	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.5	pass	IRF-14B DRF-26
Manganese content outside SiC (µg/compact)	0.133	0.003	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.1	pass	IRF-14B DRF-26
Cobalt content outside SiC (µg/compact)	0.113	0.003	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.1	pass	IRF-14B DRF-26
Nickel content outside SiC (µg/compact)	0.59	0.05	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.6	pass	IRF-14B DRF-26
Cr + Mn + Co + Ni content outside SiC (µg/compact)	1.31	0.14	16	1.753 3.463	dispersion ≤ 0.01 ≥ 200	D = $x + \sqrt{3}ks < 200$	2.1 2.1	pass	IRF-14B DRF-26
Calcium content outside SiC (µg/compact)	35.16	7.81	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	38.6	pass	IRF-14B DRF-26
Aluminum content outside SiC (µg/compact)	42.69	8.08	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	46.2	pass	IRF-14B DRF-26
Ti + V content outside SiC (µg/compact)	18.71	1.85	16	1.753	mean ≤ 240	B = $x + ts/\sqrt{n} \leq 240$	19.5	pass	IRF-14B DRF-26

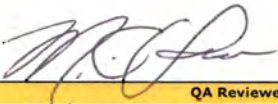
Property	Measured Data		Specification	Acceptance Criteria	Acceptance Test Value	Pass or fail	Data Records
	# of compacts	# of particles	INL SPC-923 Revision 3				
Uranium contamination fraction (g exposed U/gram U in compact)	160	246840	≤ 2.0 × 10 ⁻⁵	≤ 1 effectively exposed kernel in ≥ 237192 particles	2.1	fail	IRF-14C DRF-26
Defective SiC coating fraction (fraction of total particles)	80	123420	≤ 1.0 × 10 ⁻⁴	≤ 1 leached kernel in ≥ 47437 particles or ≤ 6 leached kernels in ≥ 118422 particles	0	pass	IRF-14D DRF-26
Defective IPyC coating fraction (fraction of total particles)	40	61710	≤ 1.0 × 10 ⁻⁴	≤ 1 with excessive U dispersion in ≥ 47437 particles or ≤ 4 with excessive U dispersion in ≥ 91533 particles	1	pass	DRF-28
Defective OPyC coating fraction (fraction of total particles)	1	1543	≤ 0.01	≤ 6 cracked or missing OPyC in ≥ 1182 particles	0	pass	DRF-27

Comments
<p>Mean uranium loading was based on two independent analyses of the leach solutions (RMAL 2303 and RMAL 2382). Average matrix density was 1.676 ± 0.008 g/cm³. The measured value of 2.1 exposed kernels came from 3 defective particles. 3/246840 corresponds to a uranium contamination fraction of <3.2e-5 at 95% confidence, which is above the specified limit. This non-conformance was documented on INL NCR-44791 with a disposition of use as is. A 1/61710 defective IPyC coating fraction corresponds to <7.7e-5 at 95% confidence. Five other particles with minor uranium dispersion were also observed, but not counted as defects according to the visual standard used in this analysis procedure. Six other anomalous particles showed features in the x-ray images that looked similar to uranium dispersion, but further analysis indicated that this was most likely due to metallic contamination on the kernel surface. Analysis of this contamination showed the presence of Fe and Cr. This metallic contamination could lead to failure of the SiC during irradiation, but is not related to defective IPyC.</p>


QC Supervisor

Accept compact lot (Yes or No): ☒ Yes

3-12-10
Date


QA Reviewer

3/12/10
Date

3 Compacting process conditions

Three samples totaling 823.4 g were riffled from coated particle batch G73H-10-93085B using a chute splitter, and shipped from B&W on May 18, 2009. After receipt, the particles were composited and renamed LEU10. Samples were riffled from LEU10 for characterization per AGR-CHAR-PIP-09, Rev. 0, "Product Inspection Plan for AGR-2 Coated Particles." Results of this analysis were reported in ORNL/TM-2009/255, "Data Compilation for AGR-2 B&W UO₂ Coated Particle Batch G73H-10-93085B." The remaining LEU10 material, 812.0 g, was sorted by size using a roller-micrometer (see Appendix C). Six uncoated kernels were separated out by this process. These kernels and other material (debris and small diameter particles) from the first 4 bins, corresponding to a roller gap of less than 850 μm , were discarded. The remaining material, 811.7 g, was re-composited and labeled LEU11.

The LEU11 particles were washed in methanol per procedure AGR-TRISOWASH-SOP-1, "Standard Operating Procedure for TRISO Particle Washing." Washing of particles prior to overcoating was adapted in order to help reduce the amount of contamination on the particles that may have been acquired during processing or general handling. This procedure also reduces the amount of loose carbon dust on the surface of the particles (approximately 0.33 g was removed). The washing procedure was adopted from General Atomics' particle washing procedures.

After washing, AGR-CHAR-PIP-10, Rev. 2, "Product Inspection Plan for AGR-2 Particles for Compacting - Preliminary Measurements" was completed. This plan calls for measurement of average particle weight, diameter, envelope volume, and uranium content. The plan also calls for riffling of 20 gram aliquots for use as overcoater charges. Riffing at ORNL was done using a 10 position rotary riffler. After riffling out the characterization samples, thirty-nine overcoater charges were prepared and labeled LEU11-Y01 through LEU11-Y39. The results of the PIP-10 inspection are reported in section 5.

One ~20g aliquot was used per overcoating run. Overcoating was performed according to AGR-COMP-SOP-2, Rev. 1, "Standard Operating Procedure for Overcoating TRISO Particles." The LEU11-Y01 through LEU11-Y39 riffled aliquots were overcoated with the following matrix batches: Y01-Y10 (RDKrS 060809), Y11-Y23 (RDKrS 071009), Y24-Y34 (RDKrS 072709), and Y35-Y39 (RDKrS 080409).

In total, 1602 grams of -10/+14 overcoated particles were produced by overcoating TRISO aliquots Y01-Y39. "-10/+14" overcoated particles are those that pass through an ASTM E11 No. 10 sieve (2.00 mm nominal opening) but do not pass through an ASTM E11 No. 14 sieve (1.40 mm nominal opening). The 1602 grams of sieved overcoated particles was tabled and 1379 grams of Bin 3 particles were recovered. "Bin 3" particles are those particles that end up in the third bin of a shape separation inclined table; these are the most spherical overcoated particles. 1379 grams of Bin 3 overcoated particles was determined to be a sufficient quantity to produce at least 215 compacts, based on preliminary calculations. The total number of compacts required for acceptance testing, irradiation, and spares was 203.

After overcoating, the overcoated particles from LEU11-Y01 through LEU11-Y39 were combined and homogenized into an overcoated particle composite. The overcoated particle composite was labeled LEU11-OP1 and AGR-CHAR-PIP-11, Rev. 0, “Product Inspection Plan for AGR-2 Overcoated Particles for Compacting” was initiated. A sample for average overcoated particle weight was riffled and analyzed. The average overcoated particle weight was $3.73\text{E-}3$ g. This average weight indicated insufficient overcoating to produce a compact of the specified length with the desired matrix density. The LEU11-OP1 composite was then passed through a roller-micrometer such that 11 bins of overcoated particles of different diameter were recovered. The weight-per-particle for each bin was calculated and it was determined that additional overcoat was needed on the smaller particles in order to increase the average weight. The smallest particles in Bins 0-5 and the largest particles in Bin 10 were removed (~ 11 g of material). The particles in Bin 6 (121 g of overcoated particles with average weight-per-particle of 0.0032 g) had additional overcoat applied from matrix batch RDKrS 080409. After re-overcoating, 211 g of the Bin 6 material was re-sorted using the roller-micrometer into Bins 7-9. The material in Bins 7-9 were composited, labeled LEU11-OP2, and AGR-CHAR-PIP-11, Rev. 0, “Product Inspection Plan for AGR-2 Overcoated Particles for Compacting” was performed. This plan calls for measurement of average overcoated particle weight and diameter. The results of the PIP-11 inspection are reported in section 7. The plan also calls for riffling of compact charges for pressing.

Based on the average uranium loading determined for the LEU11 particles of $6.386\text{E-}4$ g (section 5), 1566 particles would be needed in each compact to obtain an average uranium loading of 1.00 g for the compacts (the specified loading in SPC-923 was 1.00 ± 0.05 g). The average LEU11-OP2 overcoated particle weight was measured to be $4.053\text{E-}3$ g (section 6). Using this value, a compact charge of 6.3470 g was calculated in order to achieve a compact with a uranium loading of 1.00 ± 0.05 g. Two hundred and twenty compact charges were prepared and labeled LEU11-OP2-G001 through -G220. A record of the weight of each compact charge can be found on data report form DRF-24D, in section 7.

Actual compact uranium loading was measured to be 0.991 ± 0.006 g. Forty compacts were deconsolidated and the particles were counted as part of the x-ray analysis for possible uranium dispersion due to defective IPyC. The average number of particles per compact was determined to be 1543 ± 3 , this was 23 particles short of the target compact loading. This reduced number of particles per compact explains the slightly low uranium loading result. It is hypothesized that the reason for the undershoot in particles per compact was due to weight loss from the overcoated particles from evaporation of methanol and volatiles from the resin. Overcoated particles were kept in sealed containers as much as feasible during riffling of the compact charges. However, it is likely that the weight loss due to evaporation for the samples used to determine average particle weight was greater than for the overcoated particles weighed out into each compact charge. Therefore, the average overcoated particle weight used to calculate the target compact charge was slightly too low. This undershoot in compact loading was observed for all the AGR-2 compact lots. A volume loading method, which would not be sensitive to weight loss due to evaporation from the overcoat material, may be a more accurate method for loading the compact charges.

The LEU11-OP2-G### compacting charges were formed into green compacts using a heated, double acting die and a Promess servo-press. Compacting was performed in accordance with AGR-COMP-SOP-3, Rev. 3, "Standard Operating Procedure for Compacting Using a Servo Press." The die was heated to 75°C and approximately 0.10 g of matrix was added to the top and bottom of the compact in order to create matrix "end caps." The end caps were formed with the compact by first pouring a matrix charge into the heated die, followed by the overcoated particles, and then a second charge of matrix. This forming method created a thin (less than 0.5 mm thick) fuel free zone on the ends of the compact, called end caps. In total, 220 green compacts were fabricated. The compacts retained the designation of the riffled charges, LEU11-OP2-G001 through G220. All 220 green compacts were carbonized and heat treated according to AGR-COMP-SOP-4, Rev. 0, "Standard Operating Procedure for Carbonizing Compacts," and AGR-COMP-SOP-5 Rev. 1, "Standard Operating Procedure for Heat-treating Compacts."

A significant change was made to the compacting equipment from the LEU06 and LEU07 campaigns to the LEU08, LEU09, and LEU11 campaigns. The Carver hydraulic press was replaced with a Promess servo-press. The Promess press provided pressing rate and piston displacement control to three decimal place accuracy. This enabled the pressing rate and compact length to be precisely set and repeated for each individual LEU11-OP2-G### compacting charge. The force for each compact was also recorded more accurately, to ± 2 lbs.-f. The switch from the Carver press to the Promess press is the reason the compacting procedure was rewritten and a new revision was issued.

After compacting, 203 compacts were selected from LEU11-OP2-G001 through G220 for use. Compacts with obvious processing defects, chips, or undesirable dimensions were sorted out and not included in the 203 compacts selected for the final fuel compact lot. This down-select was part of the compacting process and was performed prior to random selection of compacts for acceptance testing. It should be understood that the results in this section and the acceptance testing are only relevant for the final 203 compact lot from which random representative samples were drawn for characterization. As instructed in AGR-CHAR-PIP-14, Rev. 1, "Product Inspection Plan for AGR-2 UO₂ Fuel Compact Lots," these 203 compacts were randomized and relabeled as LEU11-OP2-Z001 through Z203. A record of the original G-number for each Z-numbered compact can be found on data report form DRF-24C, in section 7. After relabeling, the compacts were characterized for product acceptance according to product inspection plan PIP-14. This plan calls for measurement of compact length, diameter, mass, matrix density, uranium content, impurity content, and determination of defect fractions for exposed uranium, defective SiC, uranium dispersion due to defective IPyC, and defective OPyC.

AGR-2 Process Conditions

The LEU11-OP2-Z (AGR-2 B&W UO_2) compact lot was made in accordance with the AGR-2 Fuel Specification (SPC-923, Rev. 3). The specified AGR-2 process limits are listed below.

Molding Pressure: < 60 MPa

Carbonization parameters: < 350°C/hr in He atmosphere
Hold at $950 \pm 50^\circ\text{C}$ for 1.0 ± 0.4 hr
Furnace cool

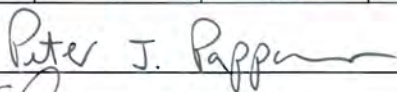
Heat treatment parameters: $\sim 20^\circ\text{C}/\text{min}$ in vacuum (< 1.3 Pa)
Hold at $1650\text{--}1850^\circ\text{C}$ for 60 ± 10 min
Furnace cool at $\sim 20^\circ\text{C}/\text{min}$ to below 700°C

Table 3-1 shows the process conditions used in molding the compacts, carbonizing the compacts, and heat treating the compacts. In the carbonization regime, the furnace was allowed to cool under no power (i.e., after holding at 950°C for 1 hour, power was turned off). In the heat treatment run, the furnace was cooled under power at $20^\circ\text{C}/\text{min}$ until the furnace temperature reached 700°C , and then the furnace was allowed to cool under no power.

Table 3-1: Summary of process conditions used in making LEU11-OP2-Z (AGR-2 B&W UO₂) compacts

Compact ID	Carbonization Parameter					Heat-treatment Parameters			
	Molding Pressure (MPa)	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere
LEU11-OP2-Z001	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z002	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z003	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z004	23.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z005	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z006	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z007	23.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z008	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z009	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z010	21.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z011	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z012	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z013	21.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z014	22.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z015	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z016	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z017	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z018	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z019	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z020	21.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z021	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z022	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z023	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z024	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z025	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z026	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z027	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z028	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z029	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z030	22.3	4.7	950	1	flowing He	20	1800	1	vacuum

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Table 3-1 (cont.): Summary of process conditions used in making LEU11-OP2-Z (AGR-2 B&W UO₂) compacts

Compact ID	Carbonization Parameter					Heat-treatment Parameters			
	Molding Pressure (MPa)	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere
LEU11-OP2-Z031	23.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z032	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z033	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z034	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z035	23.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z036	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z037	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z038	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z039	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z040	22.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z041	22.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z042	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z043	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z044	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z045	22.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z046	21.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z047	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z048	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z049	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z050	23.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z051	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z052	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z053	21.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z054	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z055	22.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z056	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z057	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z058	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z059	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z060	20.9	4.7	950	1	flowing He	20	1800	1	vacuum

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Table 3-1 (cont.): Summary of process conditions used in making LEU11-OP2-Z (AGR-2 B&W UO₂) compacts

Compact ID	Carbonization Parameter					Heat-treatment Parameters			
	Molding Pressure (MPa)	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere
LEU11-OP2-Z061	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z062	25.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z063	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z064	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z065	21.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z066	20.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z067	21.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z068	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z069	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z070	23.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z071	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z072	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z073	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z074	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z075	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z076	21.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z077	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z078	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z079	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z080	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z081	20.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z082	22.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z083	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z084	22.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z085	21.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z086	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z087	22.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z088	23.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z089	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z090	21.2	4.7	950	1	flowing He	20	1800	1	vacuum

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Table 3-1 (cont.): Summary of process conditions used in making LEU11-OP2-Z (AGR-2 B&W UO₂) compacts

Compact ID	Carbonization Parameter					Heat-treatment Parameters			
	Molding Pressure (MPa)	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere
LEU11-OP2-Z091	21.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z092	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z093	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z094	22.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z095	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z096	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z097	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z098	23.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z099	22.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z100	23.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z101	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z102	23.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z103	23.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z104	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z105	21.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z106	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z107	20.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z108	22.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z109	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z110	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z111	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z112	24.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z113	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z114	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z115	21.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z116	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z117	22.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z118	21.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z119	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z120	21.1	4.7	950	1	flowing He	20	1800	1	vacuum

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Table 3-1 (cont.): Summary of process conditions used in making LEU11-OP2-Z (AGR-2 B&W UO₂) compacts

Compact ID	Carbonization Parameter					Heat-treatment Parameters			
	Molding Pressure (MPa)	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere
LEU11-OP2-Z121	26.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z122	22.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z123	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z124	22.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z125	21.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z126	23.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z127	22.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z128	21.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z129	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z130	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z131	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z132	22.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z133	21.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z134	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z135	22.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z136	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z137	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z138	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z139	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z140	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z141	22.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z142	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z143	21.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z144	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z145	22.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z146	21.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z147	22.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z148	23.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z149	21.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z150	22.1	4.7	950	1	flowing He	20	1800	1	vacuum

Task Manager Review Peter J. PappasDate 3-11-10QAS Review M. J. PappasDate 3/11/10

Table 3-1 (cont.): Summary of process conditions used in making LEU11-OP2-Z (AGR-2 B&W UO₂) compacts

Compact ID	Carbonization Parameter					Heat-treatment Parameters			
	Molding Pressure (MPa)	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere
LEU11-OP2-Z151	20.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z152	21.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z153	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z154	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z155	21.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z156	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z157	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z158	20.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z159	23.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z160	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z161	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z162	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z163	21.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z164	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z165	22.8	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z166	22.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z167	24.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z168	21.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z169	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z170	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z171	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z172	21.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z173	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z174	21.5	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z175	23.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z176	22.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z177	22.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z178	23.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z179	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z180	21.5	4.7	950	1	flowing He	20	1800	1	vacuum

Task Manager Review Peter J. PappasDate 3-11-10QAS Review M.C.P.Date 3/11/10

Table 3-1 (cont.): Summary of process conditions used in making LEU11-OP2-Z (AGR-2 B&W UO₂) compacts

Compact ID	Carbonization Parameter					Heat-treatment Parameters			
	Molding Pressure (MPa)	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere	Heating Rate (°C/min.)	Max. Temp. (°C)	Hold Time (hrs.)	Atmosphere
LEU11-OP2-Z181	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z182	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z183	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z184	22.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z185	21.9	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z186	22.2	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z187	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z188	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z189	21.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z190	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z191	21.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z192	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z193	20.7	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z194	22.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z195	21.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z196	22.0	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z197	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z198	22.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z199	23.6	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z200	21.4	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z201	22.1	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z202	23.3	4.7	950	1	flowing He	20	1800	1	vacuum
LEU11-OP2-Z203	21.9	4.7	950	1	flowing He	20	1800	1	vacuum

Task Manager Review Peter J. PappasDate 3-11-10QAS Review M. J. PappasDate 3/11/10

4 Impurity analysis of matrix, resin, and graphites

The AGR-2 Fuel Specification (SPC-923) puts maximum limits on the elemental impurities Al, Ca, Ti, V, Cr, Mn, Fe, Co, and Ni. The natural graphite, synthetic graphite, and thermosetting resin used to make the matrix/overcoat material may contain these impurities. Therefore, the selection of graphites and resin used to make the matrix must have low concentrations of these impurities to ensure that the compacts made from the matrix will be within specification. Subsequently, part of the compacting development effort was selection and qualification of natural graphite, synthetic graphite, and resin. A graphite or resin was considered “qualified” if it could produce a compact that was within specification on impurities. The AGR-1 compacts showed that compacts could be made from these matrix constituents and pass the impurity specification (see AGR-1 Baseline Compact Lot LEU01-46T-Z data compilation ORNL/TM-2006/507, for instance). The qualification process involved receiving natural graphite and synthetic graphite and testing them via glow discharge mass spectrometry (GDMS) in order to establish their initial impurity concentrations. The graphites and resin were then combined to produce matrix that was carbonized and heat treated in powder form. The impurity levels in the heat treated matrix was then also measured by GDMS.

Table 4-1 shows the initial impurity levels for the natural graphite and synthetic graphite that were used to make LEU11-OP2-Z compacts. Natural graphite (Asbury Graphite Mills RD13371), synthetic graphite (SGL Carbon KRB2000), and thermosetting resin (Hexion Durite SC1008-lot LK9DA0008) were combined in a weight ratio of 64:16:20 to make the matrix. Four batches of matrix were produced: RDKrS-060809, RDKrS-071009, RDKrS-072709, and RDKrS-080409. A sample of the RDKrS-050809 matrix produced for the LEU09-OP2-Z compacting campaign was carbonized and heat treated in powder form prior to being tested for impurities by GDMS. RDKrS-050809 used the same raw materials, therefore, the other matrix batches were not tested. Notice that the heat treatment processes significantly reduced impurity levels in the matrix for several elements. The Vanadium impurity in the heat treated matrix is higher than in the graphites and is most likely being picked up during heat treatment in the graphite furnace. Low levels of vanadium (15-20 $\mu\text{g}/\text{compact}$) have been observed in all the AGR-2 compacts. This will be investigated further in a future study.

Table 4-1: Matrix constituents that were used in AGR-2 LEU11-OP2-Z compacts

Element	Impurity concentration (ppm)		
	Natural Graphite- RD13371	Synthetic Graphite- KRB2000	Heat treated Matrix- RDKrS-050809
Element	Concentration (ppm)	Concentration (ppm)	Concentration (ppm)
Al	36	0.35	1.2
Ca	9.4	0.7	0.51
Ti	0.43	0.06	0.92
V	0.6	0.02	8.8
Cr	4.5	<0.5	<0.5
Mn	0.54	<0.05	<0.05
Fe	34	1.4	0.11
Co	<0.05	0.25	<0.05
Ni	0.37	1.2	<0.1

The following pages show the impurity analysis reports for the natural graphite, synthetic graphite, and matrix sample listed in Table 4-1. Also attached is the certificate of analysis for the resin from Hexion. Note that an expiration date was set for the resin of 6 months from the manufacture date. LEU11-OP2-Z compacting was completed on 9/03/09.

Customer: UT-Battelle Oak Ridge
Date: 27-Dec-03

P.O. # MCH4-0191
Job # UM4335

Customer ID: Graphite
AGM RD13371

Shiva ID: U031218080

Element	Concentration [ppm wt]	Element	Concentration [ppm wt]
Li	< 0.01	Pd	< 0.1
Be	< 0.01	Ag	< 0.1
B	0.17	Cd	< 0.1
C	Matrix	In	Binder
N	-	Sn	< 0.5
O	-	Sb	< 0.5
F	< 5	Te	< 0.1
Na	2.9	I	< 0.1
Mg	4.8	Cs	< 0.1
Al	36	Ba	13
Si	240	La	< 0.5
P	1.6	Ce	0.08
S	85	Pr	< 0.05
Cl	0.8	Nd	< 0.05
K	1.5	Sm	< 0.05
Ca	9.4	Eu	< 0.05
Sc	< 0.05	Gd	< 0.05
Ti	0.43	Tb	< 0.05
V	0.6	Dy	< 0.05
Cr	4.5	Ho	< 0.05
Mn	0.54	Er	< 0.05
Fe	34	Tm	< 0.05
Co	< 0.05	Yb	< 0.05
Ni	0.37	Lu	< 0.05
Cu	1.7	Hf	< 0.05
Zn	< 0.1	Ta	< 5
Ga	< 0.1	W	3.1
Ge	< 0.1	Re	< 0.05
As	< 0.1	Os	< 0.05
Se	< 0.1	Ir	< 0.05
Br	< 0.1	Pt	< 0.05
Rb	< 0.05	Au	< 0.1
Sr	0.19	Hg	< 0.5
Y	0.95	Tl	< 0.1
Zr	0.26	Pb	< 0.5
Nb	< 0.1	Bi	< 0.1
Mo	< 0.05	Th	< 0.05
Ru	< 0.1	U	< 0.05
Rh	< 0.1		

Customer: UT-Battelle Oak Ridge
Date: 26-Dec-03

P.O. # MCH4-0191
Job # UM4335

Customer ID: Graphite
SGL

Shiva ID: U031218078

Element	Concentration [ppm wt]	Element	Concentration [ppm wt]
Li	< 0.01	Pd	< 0.1
Be	< 0.01	Ag	< 0.1
B	2.1	Cd	< 0.1
C	Matrix	In	Binder
N	-	Sn	< 0.5
O	-	Sb	< 0.5
F	< 5	Te	< 0.1
Na	0.45	I	< 0.5
Mg	0.2	Cs	< 0.5
Al	0.35	Ba	< 0.1
Si	3.1	La	< 0.5
P	0.11	Ce	< 0.05
S	9	Pr	< 0.05
Cl	3.2	Nd	< 0.05
K	0.45	Sm	< 0.05
Ca	0.7	Eu	< 0.05
Sc	< 0.05	Gd	< 0.05
Ti	0.06	Tb	< 0.05
V	0.02	Dy	< 0.05
Cr	< 0.5	Ho	< 0.05
Mn	< 0.05	Er	< 0.05
Fe	1.4	Tm	< 0.05
Co	0.25	Yb	< 0.05
Ni	1.2	Lu	< 0.05
Cu	< 0.5	Hf	< 0.05
Zn	< 0.5	Ta	< 5
Ga	< 0.1	W	2.7
Ge	< 0.1	Re	< 0.05
As	< 0.1	Os	< 0.05
Se	< 0.1	Ir	< 0.05
Br	< 0.1	Pt	< 0.05
Rb	< 0.05	Au	< 0.1
Sr	< 0.05	Hg	< 0.5
Y	< 0.05	Tl	< 0.1
Zr	< 0.05	Pb	< 0.5
Nb	< 0.1	Bi	< 0.1
Mo	< 0.05	Th	< 0.05
Ru	< 0.1	U	< 0.05
Rh	< 0.1		

Customer: **UT-Battelle Oak Ridge**
 Date: 20-May-09

P.O.#
 Job # CC
 S09X3653

Customer ID: **Graphite**
RDKrS050809

Shiva ID: S090514036

Element	Concentration [ppm wt]	Element	Concentration [ppm wt]
Li	< 0.01	Pd	< 0.1
Be	< 0.01	Ag	< 0.1
B	0.46	Cd	< 0.1
C	Matrix	In	Binder
N	-	Sn	< 0.5
O	-	Sb	< 0.5
F	< 5	Te	< 0.1
Na	0.08	I	< 20
Mg	< 0.5	Cs	< 0.1
Al	1.2	Ba	8.3
Si	29	La	< 0.5
P	0.25	Ce	< 0.5
S	2.9	Pr	< 0.05
Cl	2.3	Nd	< 0.05
K	< 0.1	Sm	< 0.05
Ca	0.51	Eu	< 0.05
Sc	< 0.05	Gd	< 0.05
Ti	0.92	Tb	< 0.05
V	8.8	Dy	< 0.05
Cr	< 0.5	Ho	< 0.05
Mn	< 0.05	Er	< 0.05
Fe	0.11	Tm	< 0.05
Co	< 0.05	Yb	< 0.05
Ni	< 0.1	Lu	< 0.05
Cu	< 0.1	Hf	< 0.05
Zn	< 0.1	Ta	< 5
Ga	< 0.1	W	0.41
Ge	< 0.1	Re	< 0.05
As	< 0.1	Os	< 0.05
Se	< 0.1	Ir	< 0.05
Br	< 0.1	Pt	< 0.05
Rb	< 0.05	Au	< 0.1
Sr	< 0.05	Hg	< 0.5
Y	< 0.05	Tl	< 0.1
Zr	0.65	Pb	< 0.5
Nb	< 0.1	Bi	< 0.1
Mo	< 0.05	Th	< 0.05
Ru	< 0.1	U	< 0.05
Rh	< 0.1		

HEXION Hexion Specialty Chemicals, Inc.

Certificate of Analysis

ORNL/TM-2010/055

Customer #: 32710
Customer Address:
CAPITAL RESIN CORPORATION
324 DERING AVENUE
COLUMBUS OH 43207
USA

Ship Date: 04/29/2009
DDN: 82577120
Customer - PO#: 901656
Date of MFG: 04/28/2009

*Oct 27, 2009
shelf life*

Attention: KAY FREY
Customer Phone #: 614-445-7177
Customer Fax #: 614-445-7290

SAP Product #: 305922

Product Description: Durite SC-1008
DS3271/450#

Property	Value	Units	Specification Ranges	Test Method
Lot Number: LK9DA0008				
pH, 25C	7.97		7.90	IR-034
Specific Gravity	1.0825		1.0700	IR-026
Viscosity	258	cPs	180	IR-111
In-process Tests	Passes	-	-	-
Solids, Phenolic (ISO)	61.83	%	60.00	IR-063

CERTIFICATE OF COMPLIANCE

It is hereby certified that Hexion's Phenolic Resin, SC-1008, shipped in this lot has been produced in accordance with Military specification (Resin, Phenolic, Laminating) MIL-R9299C, Grades A and B, dated December 3, 1968. It is recommended that SC-1008 be stored in a cool place. Storage life is materially increased by refrigerated storage. SC-1008 has a usable life of one month at 70 degrees F and six months at 40 degrees F.
Fax to Aram at 201-566-4303

Les A Toby
Quality Assurance

An ISO9001:2000 Certified Company

SHIPPED FROM:

Hexion Specialty Chemicals • 6200 Campground Road
Louisville, KY 40216 • Phone: 502-449-6563

5 Characterization of coated particles

This section contains characterization data on the TRISO particle lot LEU11. The data was obtained according to product inspection plan AGR-CHAR-PIP-10R2, "Product Inspection Plan for AGR-2 Particles for Compacting - Preliminary Measurements." The data obtained by this inspection plan is used in support of compact fabrication and for input into measurements made for compact acceptance testing. There are no direct specifications for the measured parameters.

LEU11 particles were obtained from the G73H-10-93085B coated particle batch by riffing a sample using a chute splitter. Prior to performing AGR-CHAR-PIP-10R2, the particles were sorted on a roller-micrometer to remove 6 uncoated kernels and some of the smallest diameter particles. After sorting by roller-micrometer, the particles were washed in methanol to remove loose carbon and possible surface contamination. PIP-10 calls for measurement of average particle weight, diameter, envelope volume, and uranium content. OPyC open porosity is also obtained as part of the envelope volume analysis and reported for information only. The plan also calls for riffing of 20 gram aliquots for use as overcoater charges. Riffing at ORNL was done using a 10 position rotary riffler. After riffing out the characterization samples, thirty-nine overcoater charges were prepared and labeled LEU11-Y01 through LEU11-Y39. Additional ORNL characterization performed on another sample taken from G73H-10-93085B is provided in ORNL/TM-2009/255, "Data Compilation for AGR-2 B&W UO₂ Coated Particle Batch G73H-10-93085B."

The following pages show the inspection report form (IRF-10) for the LEU11 particles. Following the IRF-10 inspection report form, which summarizes the results, are the individual data report forms for the measurements that were performed.

Inspection Report Form IRF-10: AGR-2 Particles for Compacting – Preliminary Measurements

Procedure:	AGR-CHAR-PIP-10 Rev. 2
Coated particle composite ID:	LEU11
Coated particle composite description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Property	Measured Data				Specification	Acceptance Criteria	Acceptance Test Value	Pass or fail	Data Records
	Mean (x)	Std. Dev. (s)	# measured (n)	t value	INL SPC-923				
Particle diameter (μm)	953.0	28	1424	1.646		Not Applicable			DRF-07 DRF-10
Average particle weight (g)	1.462E-03					Not Applicable			DRF-22
Average particle envelope volume (cm^3)	4.45E-04					Not Applicable			DRF-31
OPyC open porosity (ml/m^2)	0.164					Not Applicable			DRF-31
Average uranium per particle (g)	6.386E-04					Not Applicable			DRF-35

Comments


QC Supervisor

10-19-09
Date



QA Reviewer

2/03/10
Date

Data Report Form DRF-07: Imaging of Particle Diameter and Aspect Ratio Using an Optical Microscope System

Procedure:	AGR-CHAR-DAM-07 Rev. 1
Operator:	Andrew K. Kercher
Sample ID:	LEU11-B01
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Folder name containing images:	\\Mc-agr\AGR\ImageProcessing\P09072201\

DMR Calibration Expiration Date:	10/28/2009
Stage Micrometer Calibration Expiration Date:	2/10/2014
Measured Value for 1200 μm in Stage Micrometer Image:	1200. μm



Operator



Date

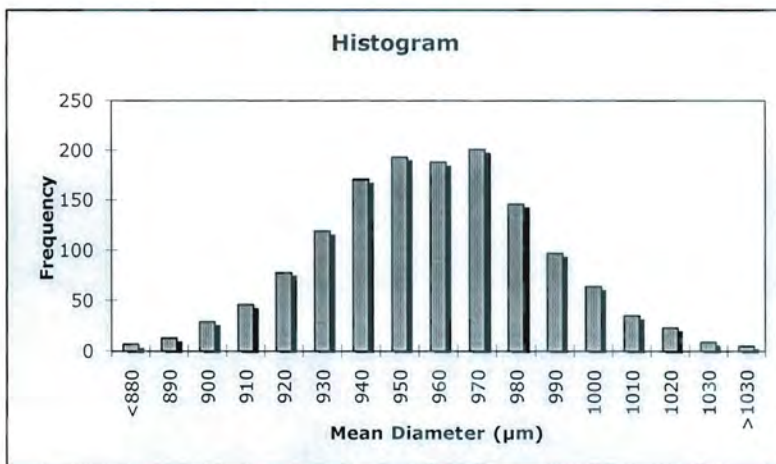
Data Report Form DRF-10A: Measurement of Particle Diameter

Procedure:	AGR-CHAR-DAM-10 Rev. 2
Operator:	Andrew K. Kercher
Folder name containing images:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09072201\
Sample ID:	LEU11-B01
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Folder name containing processed data:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09072201_output\

Number of particles analyzed:	1424
Mean of the average diameter of each particle (μm):	953.0
Standard deviation in the average diameter of each particle (μm):	28

Distribution of the average particle diameter (top binned)

Mean Diameter (μm)	Frequency
<880	7
890	13
900	29
910	46
920	78
930	119
940	171
950	193
960	188
970	201
980	146
990	97
1000	64
1010	35
1020	23
1030	9
>1030	5



Andrew K. Kercher
Operator

August 3, 2009
Date

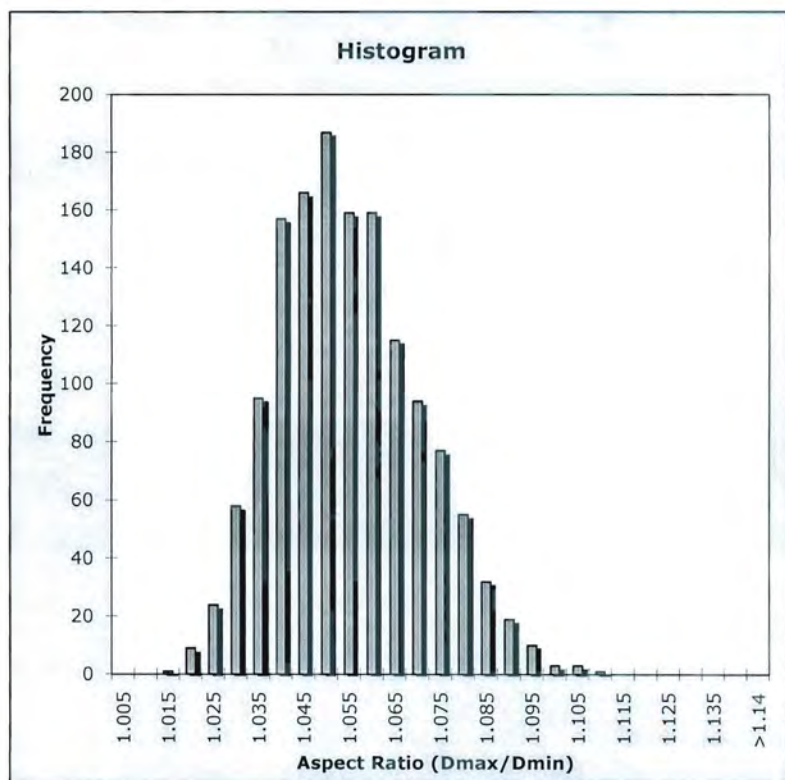
Data Report Form DRF-10B: Measurement of Particle Aspect Ratio (Dmax/Dmin)

Procedure:	AGR-CHAR-DAM-10 Rev. 2
Operator:	Andrew K. Kercher
Folder name containing images:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09072201\
Sample ID:	LEU11-B01
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Folder name containing processed data:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09072201_output\

Number of particles analyzed:	1424
Number of particles with aspect ratio ≥ 1.14	0
Average particle aspect ratio:	1.052

Distribution of the aspect ratio (top binned)

Aspect Ratio (D)	Frequency
1.005	0
1.010	0
1.015	1
1.020	9
1.025	24
1.030	58
1.035	95
1.040	157
1.045	166
1.050	187
1.055	159
1.060	159
1.065	115
1.070	94
1.075	77
1.080	55
1.085	32
1.090	19
1.095	10
1.100	3
1.105	3
1.110	1
1.115	0
1.120	0
1.125	0
1.130	0
1.135	0
1.140	0
>1.14	0



Andrew K. Kercher

Operator

August 3, 2009

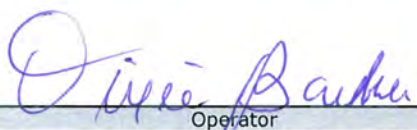
Date

Data Report Form DRF-22: Estimation of Average Particle Weight

Procedure:	AGR-CHAR-DAM-22 Rev. 1
Operator:	Dixie Barker
Particle Lot ID:	LEU11
Particle Lot Description:	AGR-2 B&W UO2 fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\ParticleWeight\W09060301_DRF22R1.xls

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Weight of particles (g):	0.2440	0.2065	0.1338	0.1263	0.1288
Number of particles:	167	141	92	86	88
Average weight/particle (g):	1.461E-03	1.465E-03	1.454E-03	1.469E-03	1.464E-03

Mean average weight/particle (g):	1.462E-03
Standard error in mean average weight/particle (g):	2.36E-06


Operator

6-3-09
Date

Data Report Form DRF-31: Measurement of Open Porosity using a Mercury Porosimeter

Procedure:	AGR-CHAR-DAM-31 Rev. 1
Operator:	S. D. Nunn
Coated particle batch ID:	LEU11-D01
Batch Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Thermocouple Expiration Date:	4/2/10
Penetrometer Expiration Date:	7/10/09
Completed DRF Filename:	\\mc-agr\AGR\Porosimeter\S09070802\S09070802_DRF31R1.xls

Mean average weight/particle (g):	1.46E-03
Standard error in mean average weight/particle (g):	2.36E-06

Weight of particles (g):	3.8057
Approximate number of particles:	2603
Uncertainty in number of particles:	4
Total envelope volume of sample (cc):	1.157
Average envelope volume/particle (cc):	4.45E-04
Sample envelope density (g/cc):	3.288

Average particle diameter (microns):	9.47E+02
Average surface area/particle (cm ²):	2.82E-02
Total sample surface area (cm ²):	7.33E+01
Intruded mercury volume from 250-10,000 psia (cc):	1.20E-03
Open porosity (ml/m ²):	1.64E-01

Comments

S. D. Nunn
Operator

7/8/09
Date

Data Report Form DRF-35: Fuel Particle Uranium Loading

Procedure:	AGR-CHAR-DAM-35 Rev. 0
Operator:	Fred Montgomery
Particle lot ID:	LEU11
Particle lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\UraniumLoading\LEU11_DRF35R0.xls

Mean average weight per particle (g):	1.462E-03
Standard error in mean average weight per particle (g):	2.4E-06

	Sample 1		Sample 2		Sample 3	
	Leach 1	Leach 2	Leach 1	Leach 2	Leach 1	Leach 2
Particle sample ID:	LEU11-E01		LEU11-F01		LEU11-G01	
Weight of particles:	4.1447		4.1672		3.9160	
Approximate number of particles:	2834		2849		2678	
Uncertainty in number of particles:	5		5		4	
Acid leach sample ID:	U09060901	U09061201	U09060902	U09061202	U09060903	U09061203
Radiochemical laboratory analysis number:	1998-001	1999-031	1998-002	1999-032	1998-003	1999-033
Weight U in leach (mg):	1813	0.409	1816	0.620	1710	0.608
Uncertainty in weight U in leach (mg):	7	0.041	7	0.062	7	0.061
Total weight U in sample (mg):	1813		1816		1710	
Average weight U per particle (mg):	0.6399		0.6374		0.6386	
Uncertainty in average weight U per particle (mg):	0.0028		0.0027		0.0028	

Mean average uranium loading per particle (g):	6.386E-04
Standard error in mean average uranium loading per particle (g):	7.0E-07

Comments
Leach 1 was analyzed by Davies-Gray titration method. Leach 2 was analyzed by ICP-MS, due to low U concentration. Initial known U recovery: 100.50%. Final Known U recovery: 100.32%. Blind titration U recovery: 100.62% Uncertainty in Davies-Gray (0.4%) based on average of measured % recovery data for LEU06,07,08,09. Data checked by FCM against official results of analyses for RMAL1998 and RMAL1999 on 7/20/09

Fred C. Montgomery
Operator

10-19-2009
Date

6 Characterization of overcoated particles

This section contains characterization data on the overcoated particle lot LEU11-OP2. The data was obtained according to product inspection plan AGR-CHAR-PIP-11R0, “Product Inspection Plan for AGR-2 Overcoated Particles for Compacting.” The data obtained by this inspection plan is used in support of compact fabrication and for input into measurements made for compact acceptance testing. There are no direct specifications for the measured parameters.

After overcoating, the overcoated particles from LEU11-Y01 through LEU11-Y39 were combined and homogenized into an overcoated particle composite. The overcoated particle composite was labeled LEU11-OP1. LEU11-OP1 was sorted by roller-micrometer and some of the overcoated particles had additional overcoat applied. The upgraded LEU11-OP1 overcoated particles were labeled LEU11-OP2 and AGR-CHAR-PIP-11R0 was completed. This plan calls for measurement of average overcoated particle weight and diameter. The plan also calls for riffing of compact charges for pressing. Two hundred and twenty compact charges were prepared and labeled LEU11-OP2-G001 through LEU11-OP2-G220. A record of the weight of each compact charge can be found on data report form DRF-24D, in section 7.

The following pages show the inspection report form (IRF-11) for the LEU11-OP2 overcoated particles. Following the IRF-11 inspection report form, which summarizes the results, are the individual data report forms for the measurements that were performed.

The average thickness of the overcoat can be estimated from the increase in the average particle size after overcoating, $(1733 \mu\text{m} - 953 \mu\text{m})/2 = 390 \mu\text{m}$. The increase in average particle weight was $(4.053 \text{ mg} - 1.462 \text{ mg}) = 2.591 \text{ mg}$. From these values, the average density of the overcoating prior to compacting can be estimated to be 1.14 g/cm^3 .

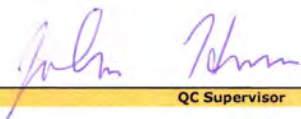
Inspection Report Form IRF-11: AGR-2 Overcoated Particles for Compacting

Procedure:	AGR-CHAR-PIP-11 Rev. 0
Overcoated particle composite ID:	LEU11-OP2
Overcoated particle composite description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Property	Measured Data				Specification	Acceptance Criteria	Acceptance Test Value	Pass or fail	Data Records
	Mean (x)	Std. Dev. (s)	# measured (n)	t value	INL SPC-923				
Overcoated particle diameter (μm)	1733.1	121	395	1.649		Not Applicable			DRF-29 DRF-30
Average overcoated particle weight (g)	4.053E-03					Not Applicable			DRF-22

Comments

Overcoated particle weight from combined results of 2 independent measurements (W09081401 and W090081402).



QC Supervisor

2-2-2010

Date



QA Reviewer


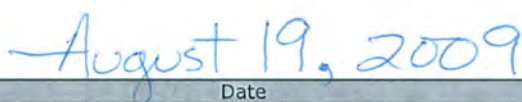
2/03/10

Date

Data Report Form DRF-29: Imaging of Overcoated Particle Diameter and Aspect Ratio Using an Optical Microscope System

Procedure:	AGR-CHAR-DAM-29 Rev. 1
Operator:	Andrew K. Kercher
Sample ID:	LEU11-OP2-B01
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Folder name containing images:	\\mc-agr\AGR\ImageProcessing\P09081901\

DMR Calibration Expiration Date:	10/28/2009
Stage Micrometer Calibration Expiration Date:	2/10/2014
Measured Value for 2500 μm in Stage Micrometer Image:	2501.8 μm

	
Operator	Date

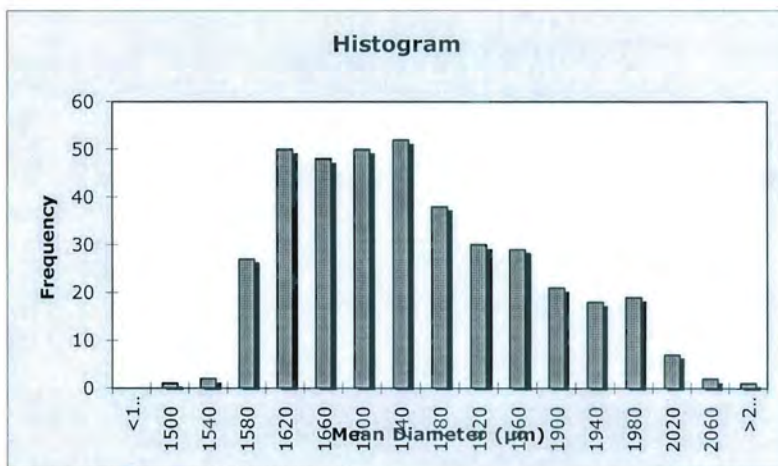
Data Report Form DRF-30A: Measurement of Over-coated Particle Diameter

Procedure:	AGR-CHAR-DAM-30 Rev. 0
Operator:	Andrew K. Kercher
Folder name containing images:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09081901\
Sample ID:	LEU11-OP2-B01
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Folder name containing processed data:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09081901_output\

Number of particles analyzed:	395
Mean of the average diameter of each particle (μm)	1733.1
Standard deviation in the average diameter of each particle (μm)	121

Distribution of the average particle diameter (top binned)

Mean Diameter (μm)	Frequency
<1460	0
1500	1
1540	2
1580	27
1620	50
1660	48
1700	50
1740	52
1780	38
1820	30
1860	29
1900	21
1940	18
1980	19
2020	7
2060	2
>2060	1



Andrew K. Kercher
Operator

August 20, 2009
Date

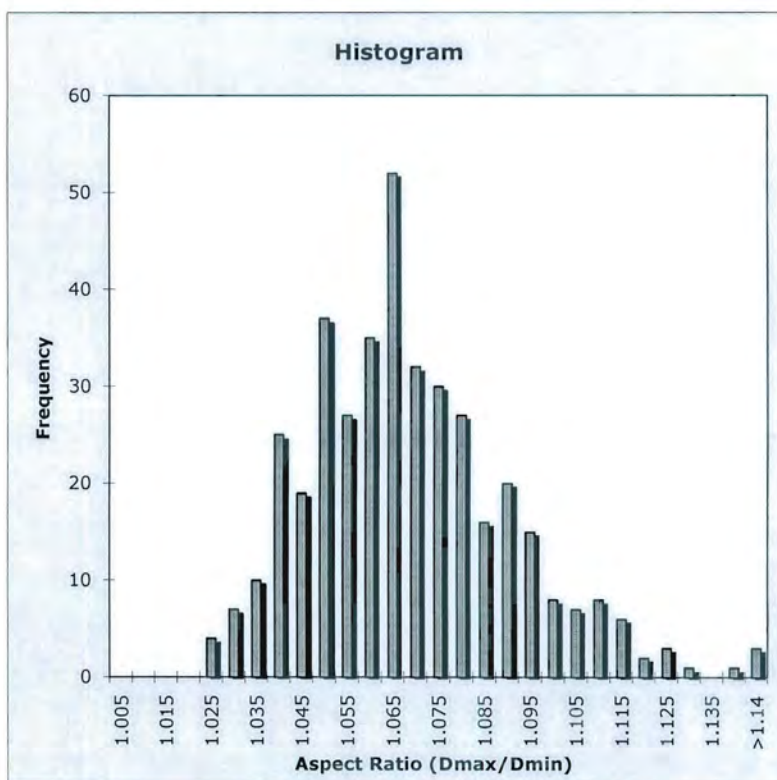
Data Report Form DRF-30B: Measurement of Over-coated Particle Aspect Ratio (Dmax/Dmin)

Procedure:	AGR-CHAR-DAM-30 Rev. 0
Operator:	Andrew K. Kercher
Folder name containing images:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09081901\
Sample ID:	LEU11-OP2-B01
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Folder name containing processed data:	\\mc-agr\AGR\ImageProcessing\Completed_Shadow\P09081901_output\

Number of particles analyzed:	395
Average particle aspect ratio:	1.066

Distribution of the aspect ratio (top binned)

Aspect Ratio (D)	Frequency
1.005	0
1.010	0
1.015	0
1.020	0
1.025	4
1.030	7
1.035	10
1.040	25
1.045	19
1.050	37
1.055	27
1.060	35
1.065	52
1.070	32
1.075	30
1.080	27
1.085	16
1.090	20
1.095	15
1.100	8
1.105	7
1.110	8
1.115	6
1.120	2
1.125	3
1.130	1
1.135	0
1.140	1
>1.14	3



Andrew K. Kercher

Operator

August 20, 2009

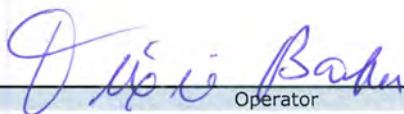
Date

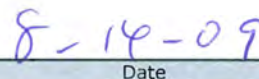
Data Report Form DRF-22: Estimation of Average Particle Weight

Procedure:	AGR-CHAR-DAM-22 Rev. 1
Operator:	Dixie Barker
Particle Lot ID:	LEU11-OP2
Particle Lot Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\ParticleWeight\W09081401_DRF22R1.xls

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5
Weight of particles (g):	0.5905	0.5824	0.5911	0.6279	0.5840
Number of particles:	145	146	144	156	145
Average weight/particle (g):	4.072E-03	3.989E-03	4.105E-03	4.025E-03	4.028E-03

Mean average weight/particle (g):	4.044E-03
Standard error in mean average weight/particle (g):	2.02E-05


Operator


Date

Data Report Form DRF-22: Estimation of Average Particle Weight

Procedure:	AGR-CHAR-DAM-22 Rev. 1
Operator:	Dixie Barker
Particle Lot ID:	LEU11-OP2
Particle Lot Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\ParticleWeight\W09081402_DRF22R1.xls

	Sample 6	Sample 7	Sample 8	Sample 9	Sample 10
Weight of particles (g):	0.5263	0.5982	0.5685	0.6288	0.5552
Number of particles:	131	147	140	153	137
Average weight/particle (g):	4.018E-03	4.069E-03	4.061E-03	4.110E-03	4.053E-03

Mean average weight/particle (g):	4.062E-03
Standard error in mean average weight/particle (g):	1.48E-05

Dixie Barker
Operator

8-14-02 2009 *gH* 3-17-2010
Date

7 Characterization of compacts

This section contains acceptance testing data on the compact lot LEU11-OP2-Z. The data was obtained according to product inspection plan AGR-CHAR-PIP-14R1, “Product Inspection Plan for AGR-2 UO₂ Fuel Compact Lots.” This compact lot was determined to not fully satisfy the specifications in section 4.3 of the AGR-2 Fuel Specification (INL SPC-923, Rev. 3). All specifications were satisfied except for a higher than allowed fraction of exposed uranium, discussed below. However, it was determined by the program that the observed uranium contamination fraction non-conformance was acceptable for “use as is” in the AGR-2 irradiation test. This disposition was documented on INL NCR-44791.

After compacting, 203 compacts were selected from LEU11-OP2-G001 through G220 for use. Compacts with obvious processing defects, chips, or undesirable dimensions were sorted out and not included in the 203 compacts selected for the final fuel compact lot. This down-select was part of the compacting process and was performed prior to random selection of compacts for acceptance testing. It should be understood that the results in this section and the acceptance testing are only relevant for the final 203 compact lot from which random representative samples were drawn for characterization. As instructed in AGR-CHAR-PIP-14R1, these 203 compacts were randomized and relabeled as LEU11-OP2-Z001 through Z203. A record of the original G-number for each Z-numbered compact can be found on data report form DRF-24C, in this section. After relabeling, the compacts were characterized for product acceptance according to product inspection plan PIP-14. This plan calls for measurement of compact length, diameter, mass, matrix density, uranium content, impurity content, and determination of defect fractions for exposed uranium, defective SiC, uranium dispersion due to defective IPyC, and defective OPyC.

The following pages show the inspection report forms (IRF-14A, IRF-14B, IRF-14C, IRF-14D) for the LEU11-OP2-Z compacts. Following the IRF-14 inspection report forms, which summarize the results, are the individual data report forms for the measurements that were performed. Note that the leach-burn-leach (LBL) analysis is performed on sets of 20 compacts at a time, in four sample groups with 5 compacts in each sample. Inspection report forms IRF-14B, IRF-14C, and IRF-14D summarize the results from each set of 20 compacts. Inspection report form IRF-14A summarizes all the analyses. The mean and standard deviation for the impurity analyses (IRF-14B), the uranium contamination fraction or effective number of exposed kernels before the burn (IRF-14C) and the defective SiC coating fraction or number of exposed kernels after the burn (IRF-14D) are calculated from the combined results of all the relevant sample groups. These combined results, which are then entered into IRF-14A, are provided in Table 7-1 and Table 7-2 below.

Table 7-1: Summary of impurity analysis for LEU11-OP2-Z compacts

Compact ID numbers:	043, 202, 168, 112, 033	145, 027, 105, 119, 167	137, 064, 175, 009, 195	148, 149, 035, 048, 038	200, 037, 153, 157, 012	109, 011, 124, 070, 056	158, 031, 095, 041, 154	004, 166, 040, 067, 142	Mean	Standard Deviation
Number of compacts:	5	5	5	5	5	5	5	5		
Iron										
Deconsolidation-leach (DRF-26A) (μg):	10.55	10.71	10.14	10.14	5.19	5.03	5.23	5.23		
Burn-leach (DRF-26B) (μg):	4.24	4.39	6.08	4.33	4.74	4.09	4.71	4.18		
Total leached (μg):	14.79	15.10	16.21	14.46	9.93	9.11	9.94	9.41		
Fe outside SiC ($\mu\text{g}/\text{compact}$):	2.96	3.02	3.24	2.89	1.99	1.82	1.99	1.88	Continued on next page	
Chromium										
Deconsolidation-leach (DRF-26A) (μg):	1.68	1.31	1.21	0.73	2.92	3.03	2.75	2.80		
Burn-leach (DRF-26B) (μg):	0.47	0.50	0.39	0.39	0.50	0.45	0.41	0.37		
Total leached (μg):	2.15	1.81	1.60	1.13	3.42	3.47	3.17	3.17		
Cr outside SiC ($\mu\text{g}/\text{compact}$):	0.43	0.36	0.32	0.23	0.68	0.69	0.63	0.63	Continued on next page	
Manganese										
Deconsolidation-leach (DRF-26A) (μg):	0.49	0.50	0.48	0.47	0.49	0.45	0.49	0.47		
Burn-leach (DRF-26B) (μg):	0.20	0.20	0.19	0.20	0.19	0.19	0.20	0.19		
Total leached (μg):	0.69	0.69	0.67	0.67	0.68	0.64	0.69	0.66		
Mn outside SiC ($\mu\text{g}/\text{compact}$):	0.14	0.14	0.13	0.13	0.14	0.13	0.14	0.13	Continued on next page	
Cobalt										
Deconsolidation-leach (DRF-26A) (μg):	0.41	0.42	0.40	0.40	0.41	0.38	0.41	0.40		
Burn-leach (DRF-26B) (μg):	0.17	0.17	0.16	0.17	0.16	0.16	0.17	0.16		
Total leached (μg):	0.58	0.59	0.56	0.57	0.57	0.54	0.58	0.56		
Co outside SiC ($\mu\text{g}/\text{compact}$):	0.12	0.12	0.11	0.11	0.11	0.11	0.12	0.11	Continued on next page	
Nickel										
Deconsolidation-leach (DRF-26A) (μg):	2.05	2.08	1.97	1.97	2.03	1.88	2.05	1.95		
Burn-leach (DRF-26B) (μg):	0.91	0.95	0.85	0.84	0.87	0.83	0.85	0.81		
Total leached (μg):	2.96	3.03	2.82	2.81	2.91	2.71	2.90	2.76		
Ni outside SiC ($\mu\text{g}/\text{compact}$):	0.59	0.61	0.56	0.56	0.58	0.54	0.58	0.55	Continued on next page	
Transition Metals										
Cr+Mn+Co+Ni outside SiC ($\mu\text{g}/\text{compact}$):	1.28	1.22	1.13	1.03	1.52	1.47	1.47	1.43	Continued on next page	
Calcium										
Deconsolidation-leach (DRF-26A) (μg):	126.49	79.96	69.36	74.34	165.79	63.77	113.88	102.94		
Burn-leach (DRF-26B) (μg):	85.60	95.34	84.78	86.42	76.72	79.86	73.90	81.83		
Total leached (μg):	212.09	175.31	154.14	160.76	242.52	143.63	187.79	184.77		
Ca outside SiC ($\mu\text{g}/\text{compact}$):	42.42	35.06	30.83	32.15	48.50	28.73	37.56	36.95	Continued on next page	
Aluminum										
Deconsolidation-leach (DRF-26A) (μg):	109.28	108.47	100.34	93.75	145.80	131.57	152.03	157.06		
Burn-leach (DRF-26B) (μg):	84.50	89.14	92.70	86.60	99.35	84.92	86.86	90.06		
Total leached (μg):	193.78	197.61	193.05	180.34	245.15	216.49	238.89	247.12		
Al outside SiC ($\mu\text{g}/\text{compact}$):	38.76	39.52	38.61	36.07	49.03	43.30	47.78	49.42	Continued on next page	
Titanium										
Deconsolidation-leach (DRF-26A) (μg):	8.15	7.71	6.71	2.34	15.79	14.22	16.79	9.07		
Burn-leach (DRF-26B) (μg):	4.24	5.03	6.04	5.94	5.75	6.18	4.08	9.16		
Total leached (μg):	12.40	12.74	12.75	8.28	21.54	20.40	20.87	18.23		
Ti outside SiC ($\mu\text{g}/\text{compact}$):	2.48	2.55	2.55	1.66	4.31	4.08	4.17	3.65	Continued on next page	
Vanadium										
Deconsolidation-leach (DRF-26A) (μg):	37.55	38.02	37.21	34.58	48.46	47.99	48.83	51.59		
Burn-leach (DRF-26B) (μg):	33.92	36.75	37.38	37.38	36.89	35.82	33.96	38.25		
Total leached (μg):	71.47	74.76	74.59	71.96	85.35	83.82	82.79	89.84		
V outside SiC ($\mu\text{g}/\text{compact}$):	14.29	14.95	14.92	14.39	17.07	16.76	16.56	17.97	Continued on next page	
Titanium and Vanadium										
Ti + V outside SiC ($\mu\text{g}/\text{compact}$):	16.77	17.50	17.47	16.05	21.38	20.84	20.73	21.61	Continued on next page	

Table 7-1: Summary of impurity analysis for LEU11-OP2-Z compacts (continued)

Compact ID numbers:	069, 087, 046, 081, 194	116, 187, 189, 028, 185	103, 139, 016, 039, 108	088, 061, 042, 002, 080	120, 184, 049, 144, 076	203, 096, 114, 191, 022	171, 161, 025, 093, 117	138, 141, 005, 084, 021	Mean	Standard Deviation
Number of compacts:	5	5	5	5	5	5	5	5		
Iron										
Deconsolidation-leach (DRF-26A) (μg):	10.22	10.14	10.14	9.81	10.38	9.89	10.22	9.85		
Burn-leach (DRF-26B) (μg):	9.11	4.20	4.19	4.13	4.27	4.22	4.35	6.26		
Total leached (μg):	19.32	14.33	14.33	13.94	14.66	14.11	14.57	16.11		
Fe outside SiC ($\mu\text{g}/\text{compact}$):	3.86	2.87	2.87	2.79	2.93	2.82	2.91	3.22	2.75	0.56
Chromium										
Deconsolidation-leach (DRF-26A) (μg):	1.69	1.61	1.55	1.96	2.31	1.76	2.11	1.86		
Burn-leach (DRF-26B) (μg):	0.52	0.34	0.39	0.50	0.49	0.39	0.43	0.46		
Total leached (μg):	2.21	1.95	1.94	2.46	2.80	2.15	2.54	2.32		
Cr outside SiC ($\mu\text{g}/\text{compact}$):	0.44	0.39	0.39	0.49	0.56	0.43	0.51	0.46	0.48	0.13
Manganese										
Deconsolidation-leach (DRF-26A) (μg):	0.47	0.47	0.47	0.45	0.48	0.46	0.47	0.46		
Burn-leach (DRF-26B) (μg):	0.19	0.19	0.19	0.19	0.19	0.20	0.19	0.19		
Total leached (μg):	0.66	0.66	0.66	0.65	0.68	0.65	0.67	0.65		
Mn outside SiC ($\mu\text{g}/\text{compact}$):	0.13	0.13	0.13	0.13	0.14	0.13	0.13	0.13	0.133	0.003
Cobalt										
Deconsolidation-leach (DRF-26A) (μg):	0.40	0.40	0.40	0.39	0.41	0.39	0.40	0.39		
Burn-leach (DRF-26B) (μg):	0.16	0.17	0.16	0.16	0.17	0.17	0.16	0.16		
Total leached (μg):	0.56	0.56	0.56	0.55	0.57	0.55	0.56	0.55		
Co outside SiC ($\mu\text{g}/\text{compact}$):	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.113	0.003
Nickel										
Deconsolidation-leach (DRF-26A) (μg):	1.98	1.97	1.97	2.87	2.02	1.92	1.98	1.91		
Burn-leach (DRF-26B) (μg):	0.93	0.82	0.84	0.97	0.90	0.95	0.90	1.05		
Total leached (μg):	2.91	2.78	2.81	3.84	2.92	2.87	2.89	2.97		
Ni outside SiC ($\mu\text{g}/\text{compact}$):	0.58	0.56	0.56	0.77	0.58	0.57	0.58	0.59	0.59	0.05
Transition Metals										
Cr+Mn+Co+Ni outside SiC ($\mu\text{g}/\text{compact}$):	1.27	1.19	1.20	1.50	1.39	1.24	1.33	1.30	1.31	0.14
Calcium										
Deconsolidation-leach (DRF-26A) (μg):	52.64	46.07	39.28	24.20	164.40	73.22	134.33	81.74		
Burn-leach (DRF-26B) (μg):	90.21	57.48	153.14	94.79	74.43	89.31	74.99	101.54		
Total leached (μg):	142.84	103.55	192.42	119.00	238.82	162.53	209.31	183.27		
Ca outside SiC ($\mu\text{g}/\text{compact}$):	28.57	20.71	38.48	23.80	47.76	32.51	41.86	36.65	35.16	7.81
Aluminum										
Deconsolidation-leach (DRF-26A) (μg):	123.99	112.17	119.36	119.64	85.60	83.58	97.95	101.19		
Burn-leach (DRF-26B) (μg):	215.74	82.79	86.33	88.19	86.59	98.17	108.76	92.80		
Total leached (μg):	339.74	194.97	205.69	207.82	172.19	181.75	206.71	193.99		
Al outside SiC ($\mu\text{g}/\text{compact}$):	67.95	38.99	41.14	41.56	34.44	36.35	41.34	38.80	42.69	8.08
Titanium										
Deconsolidation-leach (DRF-26A) (μg):	12.45	11.98	11.49	11.40	9.34	7.14	9.45	8.62		
Burn-leach (DRF-26B) (μg):	7.20	5.98	6.06	6.56	5.66	10.16	7.02	6.96		
Total leached (μg):	19.65	17.96	17.54	17.96	15.00	17.30	16.47	15.59		
Ti outside SiC ($\mu\text{g}/\text{compact}$):	3.93	3.59	3.51	3.59	3.00	3.46	3.29	3.12	3.31	0.72
Vanadium										
Deconsolidation-leach (DRF-26A) (μg):	44.27	43.39	41.30	42.52	31.02	29.47	34.65	32.84		
Burn-leach (DRF-26B) (μg):	36.57	35.93	37.46	33.99	36.82	42.22	41.46	33.94		
Total leached (μg):	80.84	79.32	78.77	76.52	67.84	71.69	76.12	66.78		
V outside SiC ($\mu\text{g}/\text{compact}$):	16.17	15.86	15.75	15.30	13.57	14.34	15.22	13.36	15.41	1.29
Titanium and Vanadium										
Ti + V outside SiC ($\mu\text{g}/\text{compact}$):	20.10	19.46	19.26	18.90	16.57	17.80	18.52	16.47	18.71	1.85

Table 7-2: Summary of uranium contamination and SiC defect analysis for LEU11-OP2-Z compacts

Compact ID numbers	Number of compacts	Effective number of exposed kernels before burn	Number of kernels leached after burn
043, 202, 168, 112, 033	5	0.0	0
145, 027, 105, 119, 167	5	0.0	0
137, 064, 175, 009, 195	5	0.0	0
148, 149, 035, 048, 038	5	0.0	0
200, 037, 153, 157, 012	5	0.0	0
109, 011, 124, 070, 056	5	0.0	0
158, 031, 095, 041, 154	5	0.0	0
004, 166, 040, 067, 142	5	0.0	0
069, 087, 046, 081, 194	5	0.0	0
116, 187, 189, 028, 185	5	1.0	0
103, 139, 016, 039, 108	5	0.0	0
088, 061, 042, 002, 080	5	0.0	0
120, 184, 049, 144, 076	5	0.0	0
203, 096, 114, 191, 022	5	0.0	0
171, 161, 025, 093, 117	5	0.0	0
138, 141, 005, 084, 021	5	0.0	0
104, 014, 143, 068, 125	5	0.0	Not Analyzed
071, 165, 199, 176, 130	5	0.0	Not Analyzed
059, 100, 177, 090, 024	5	0.0	Not Analyzed
123, 131, 006, 083, 017	5	0.8	Not Analyzed
094, 118, 053, 159, 126	5	0.0	Not Analyzed
164, 172, 015, 196, 192	5	0.0	Not Analyzed
073, 107, 082, 201, 058	5	0.0	Not Analyzed
099, 102, 169, 013, 055	5	0.0	Not Analyzed
163, 122, 097, 023, 030	5	0.0	Not Analyzed
086, 026, 019, 020, 063	5	0.0	Not Analyzed
115, 170, 162, 007, 008	5	0.0	Not Analyzed
182, 057, 092, 178, 156	5	0.0	Not Analyzed
044, 010, 121, 054, 174	5	0.0	Not Analyzed
134, 047, 173, 003, 190	5	0.3	Not Analyzed
129, 128, 155, 052, 077	5	0.0	Not Analyzed
111, 060, 146, 179, 051	5	0.0	Not Analyzed
Total:	160	2.1	0

After compacts were electrolytically deconsolidated and leached, uranium was detected at a level equivalent to ~2.1 kernels. This was from 3 defective particles. Note that, for the third defective particle in Table 7-2, only 0.3 of a kernel leached out during the standard pre-burn double leach. Usually >80% of the kernel is leached by the first pre-burn leach for a particle with broken coatings, which is the uranium contamination defect type previously observed for coated particles produced during the AGR-2 campaign. The broken coatings are thought to have occurred at B&W during removal of the particles from the coating furnace via a suction transfer system. The sample containing the partially leached particle will be further leached and then the particle will be identified by x-ray and analyzed to determine the form of this unusual defect. A uranium contamination defect fraction of 3 out of 246840 particles analyzed corresponds to a binomial distribution defect fraction of $\leq 3.2\text{E-}5$ at 95% confidence, which is above the specified limit of $\leq 2.0\text{E-}5$. Because the suspected root cause of this nonconformance was not related to the

compacting and characterization activities at ORNL, a nonconformance report was issued by INL (NCR-44791). The disposition was to “use as is” for the AGR-2 irradiation test.

The measured exposed uranium defect fraction for the 160 compact sample was 3 out of 246840 particles, which is less than $1.2\text{E-}5$. This indicates that the entire compact lot may have a defect fraction below the specified limit. However, it would require a greater number of compacts be analyzed in order to verify this at 95% confidence. Without additional compact analysis, the exposed uranium defect fraction for the entire compact lot can only be determined to be below the $2\text{E-}5$ specified limit to 73% confidence, using binomial distribution statistics. One could also consider the use of a hypergeometric distribution to calculate the exposed uranium defect fraction. The binomial distribution (specified by PIP-14 for acceptance test calculations) is commonly used for coated particle fuel analysis and is more conservative than the hypergeometric distribution. However, when the sample size is a significant fraction of the entire population, which is the case for this analysis, it is more appropriate to apply the hypergeometric distribution. The hypergeometric distribution would predict a defect fraction of $\leq 2.3\text{E-}5$ at 95% confidence, based on the measured sample. Alternately, the hypergeometric distribution would determine the uranium contamination defect fraction to be below the $2\text{E-}5$ specified limit to 88.6% confidence. Regardless of the chosen calculation method, it is obvious that these compacts are, at worse, only marginally over the specified limit for exposed uranium.

Particles from 40 compacts were analyzed for uranium dispersion, which is an indicator of a defective IPyC layer. Excessive permeability in the IPyC may result in chlorine intrusion during SiC deposition and subsequent uranium leaching out of the kernel and into the buffer during compact heat treatment. Several anomalous particles were observed in the x-ray analysis of the 61,710 particles deconsolidated from the 40 compacts. One particle was identified as meeting the visual standard for unacceptable uranium dispersion. This particle is shown in Figure 7-1. In this figure, the kernel appears as a bright circle in the center, the SiC is the gray outer ring. The buffer and IPyC region should appear dark. However, in this particle a region of higher density material (presumably uranium) is dispersed near the buffer/IPyC interface. This region appears to initiate at a fixed distance from the kernel and spreads outward. This may indicate contamination during coating, as opposed to uranium dispersion from the kernel. However, high resolution x-ray tomography and analysis by scanning electron microscopy (SEM) with energy dispersive spectroscopy (EDS) was inconclusive, so this particle was identified as a defect according to the analysis procedure and low resolution x-ray visual standard used to identify particles with defective IPyC. High resolution tomography showed possible indication of a defective area in the IPyC layer, identified with an arrow in Figure 7-1. This region shows a slight thinning in the IPyC with some intrusion by the SiC. One defective particle out of 61,710 particles analyzed corresponds to a binomial distribution defect fraction of $\leq 7.7\text{E-}5$ at 95% confidence, which is below the specified limit of $\leq 1.0\text{E-}4$.

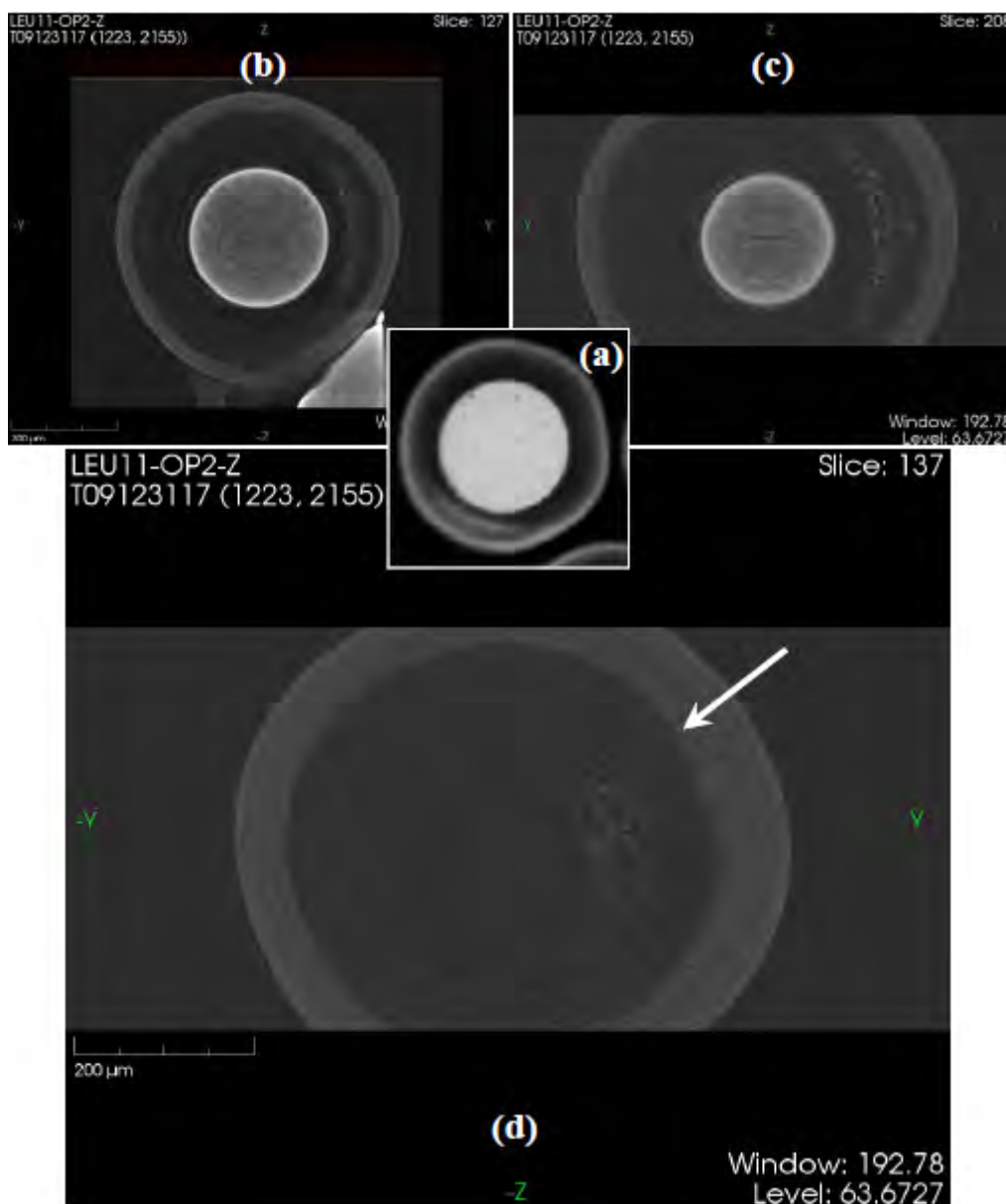


Figure 7-1. A particle with what appears to be unacceptable uranium dispersion. Low resolution x-ray image (a) and high resolution x-ray tomographs (b) - (d).

Five additional particles were also identified with what appears to be uranium at the buffer/IPyC interface. However, these particles did not qualify as defects per the visual standard. Figure 7-2 shows one example. SEM/EDS analysis did not show anything other than uranium in the region inhabited by these small spots.

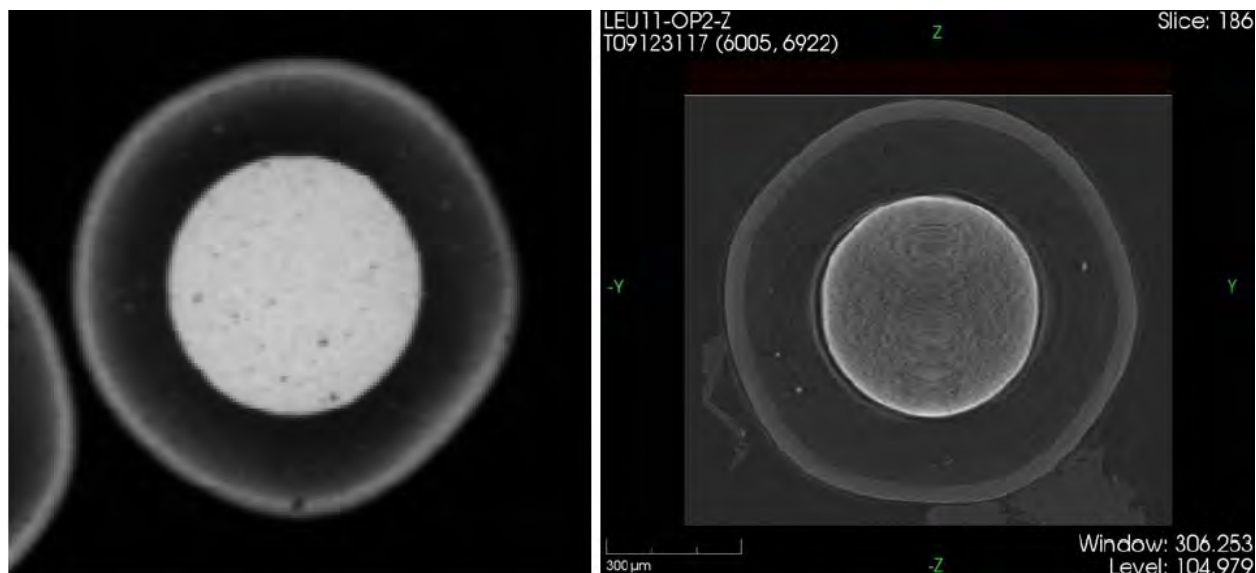


Figure 7-2. A particle with what appears to be “acceptable” uranium dispersion. Low resolution x-ray image (left) and high resolution x-ray tomograph (right).

Six particles were identified by the low resolution x-ray survey to have material near the kernel surface with a higher x-ray density than the buffer carbon. Figure 7-3 shows one example. These regions could be indications of uranium dispersion. However, subsequent SEM/EDS analysis of one of the particles after fracturing open the coating identified Fe and Cr contamination in this region. Si and U were also seen in the EDS analysis, but these could be explained by cross contamination from the kernel and SiC layer. It is conjectured that the surface of the kernel was contaminated prior to coating. This contamination apparently reacted with the carbon in the buffer during periods that the particle was at elevated temperatures (up to 1800°C), which can be seen in the x-ray images by the dispersion of the contamination out from the kernel surface. Figure 7-4 shows another particle with a piece of unreacted contamination (bright spot) still evident near the kernel surface. Measurement of the buffer thickness in this region indicates that the buffer was deposited on top of this contamination. Figure 7-3 (b) also shows a bulge in the coating, indicating presence of foreign matter at the kernel surface prior to coating.

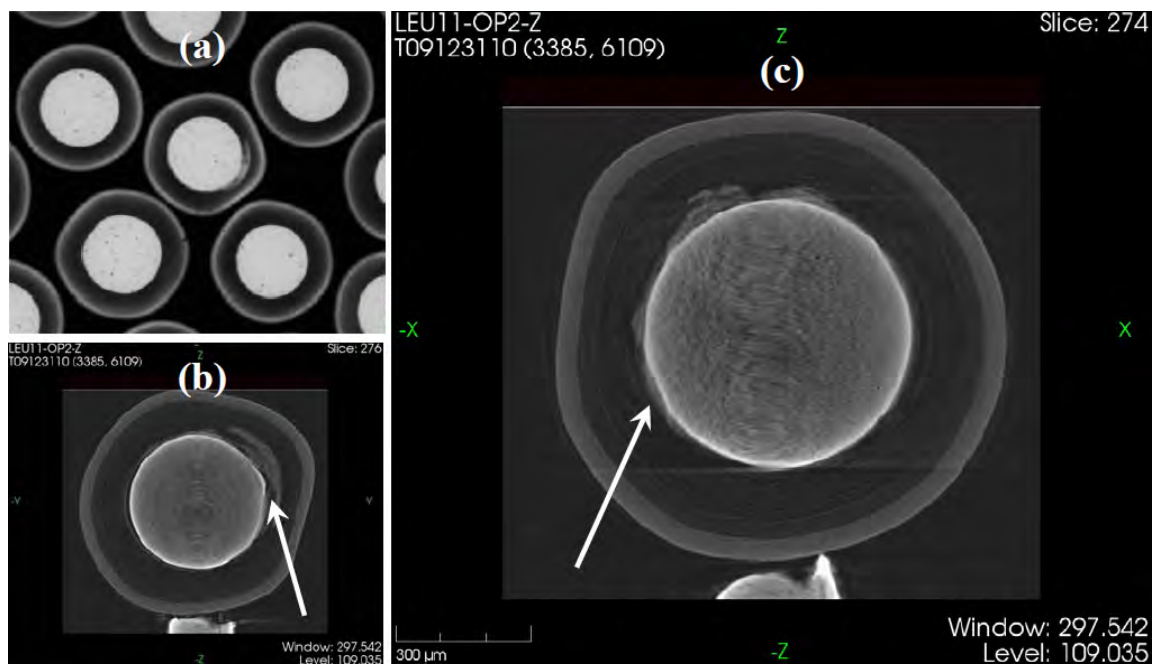


Figure 7-3. A particle with an impurity at the kernel surface. Low resolution x-ray image (upper left) and high resolution x-ray tomographs (other).

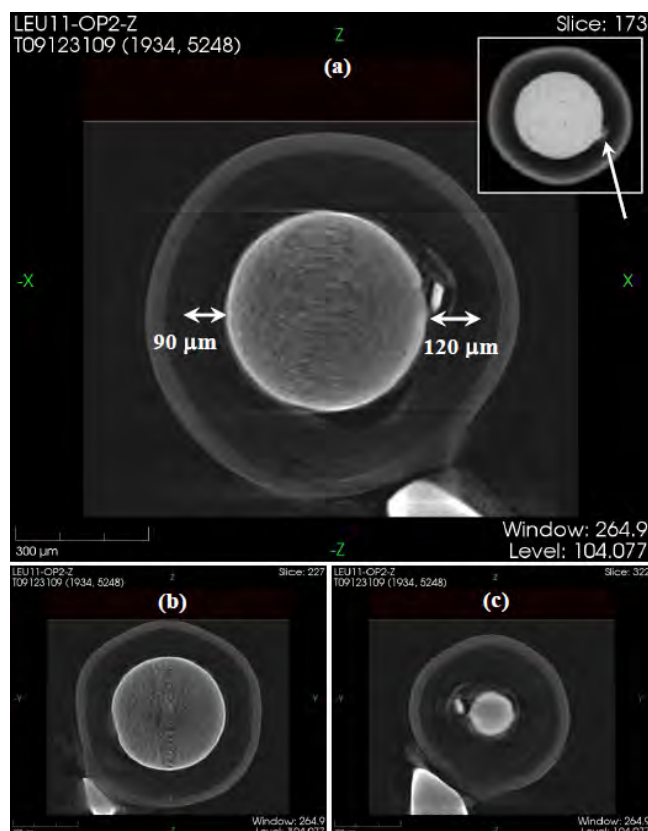


Figure 7-4. A particle with an impurity at the kernel surface. Low resolution x-ray image (inset) and high resolution x-ray tomographs (a) - (c).

Other anomalies observed during the low resolution inspection included a few dozen particles with missing portions from the kernel. This resulted in deviations in the coatings from the ideal spherical shape (Figure 7-5). In addition, one particle was found that had a SiC layer that was only about 25 μm thick (Figure 7-6).

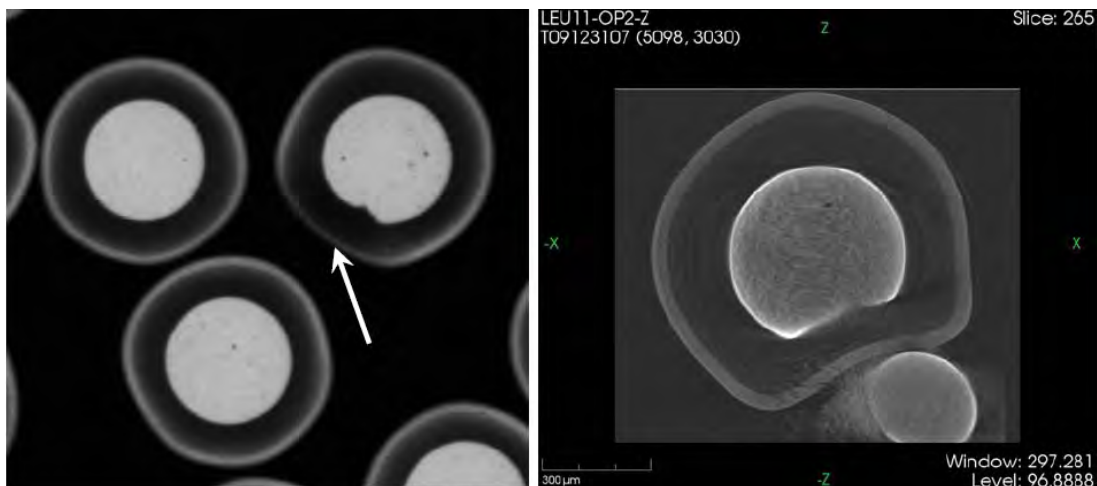


Figure 7-5. A particle with a broken kernel. Low resolution x-ray image (left) and a high resolution x-ray tomograph (right).

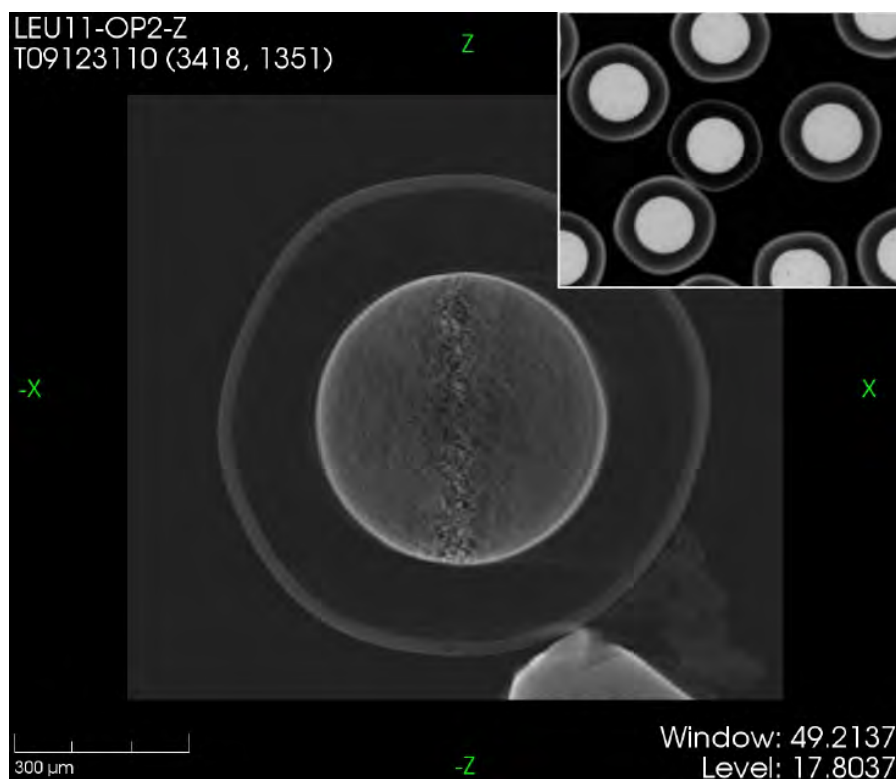


Figure 7-6. A particle with thin SiC. Low resolution x-ray image (inset) and high resolution x-ray tomograph (other).

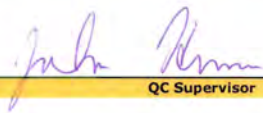
Inspection Report Form IRF-14A: AGR-2 UO2 Fuel Compact Lots

Procedure:	AGR-CHAR-PIP-14 Rev. 0
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers of compacts available for irradiation test (pending acceptance):	001 018 029 032 034 036 045 062 065 066 072 074 075 078 079 085 089 091 098 101 106 127 133 136 140 147 150 152 180 181 183 186 188 193 197 198

Property	Measured Data				Specification	Acceptance Criteria	Acceptance Test Value	Pass or fail	Data Records
	Mean (x)	Std. Dev. (s)	Measurements (n)	k or t value	INL SPC-923 Revision 3				
Uranium loading (gU/compact)	0.993	0.006	6	2.015	1.00 ± 0.05	A = $x - ts/\sqrt{n} \geq 0.95$ B = $x + ts/\sqrt{n} \leq 1.05$	0.988 0.997	pass pass	DRF-25
Compact diameter (mm)	See DRF-24				12.22 - 12.46	All available for irradiation test meet specification	See DRF-24	Pass	DRF-24
Compact length (mm)					25.02 - 25.40				
Compact matrix density (g/cm ³)					≥ 1.45				
Iron content outside SiC (µg/compact)	2.75	0.56	16	1.753	mean ≤ 25	B = $x + ts/\sqrt{n} \leq 25$	3.0	pass	IRF-14B DRF-26
				3.463	dispersion ≤ 0.01 ≥ 100	D = $x + \sqrt{3}ks < 100$	6.1	pass	
Chromium content outside SiC (µg/compact)	0.48	0.13	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.5	pass	IRF-14B DRF-26
Manganese content outside SiC (µg/compact)	0.133	0.003	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.1	pass	IRF-14B DRF-26
Cobalt content outside SiC (µg/compact)	0.113	0.003	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.1	pass	IRF-14B DRF-26
Nickel content outside SiC (µg/compact)	0.59	0.05	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	0.6	pass	IRF-14B DRF-26
Cr + Mn + Co + Ni content outside SiC (µg/compact)	1.31	0.14	16	1.753 3.463	dispersion ≤ 0.01 ≥ 200	D = $x + \sqrt{3}ks < 200$	2.1 2.1	pass	IRF-14B DRF-26
Calcium content outside SiC (µg/compact)	35.16	7.81	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	38.6	pass	IRF-14B DRF-26
Aluminum content outside SiC (µg/compact)	42.69	8.08	16	1.753	mean ≤ 50	B = $x + ts/\sqrt{n} \leq 50$	46.2	pass	IRF-14B DRF-26
Ti + V content outside SiC (µg/compact)	18.71	1.85	16	1.753	mean ≤ 240	B = $x + ts/\sqrt{n} \leq 240$	19.5	pass	IRF-14B DRF-26

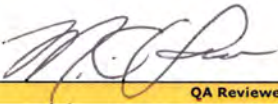
Property	Measured Data		Specification	Acceptance Criteria	Acceptance Test Value	Pass or fail	Data Records
	# of compacts	# of particles	INL SPC-923 Revision 3				
Uranium contamination fraction (g exposed U/gram U in compact)	160	246840	≤ 2.0 × 10 ⁻⁵	≤ 1 effectively exposed kernel in ≥ 237192 particles	2.1	fail	IRF-14C DRF-26
Defective SiC coating fraction (fraction of total particles)	80	123420	≤ 1.0 × 10 ⁻⁴	≤ 1 leached kernel in ≥ 47437 particles or ≤ 6 leached kernels in ≥ 118422 particles	0	pass	IRF-14D DRF-26
Defective IPyC coating fraction (fraction of total particles)	40	61710	≤ 1.0 × 10 ⁻⁴	≤ 1 with excessive U dispersion in ≥ 47437 particles or ≤ 4 with excessive U dispersion in ≥ 91533 particles	1	pass	DRF-28
Defective OPyC coating fraction (fraction of total particles)	1	1543	≤ 0.01	≤ 6 cracked or missing OPyC in ≥ 1182 particles	0	pass	DRF-27

Comments
<p>Mean uranium loading was based on two independent analyses of the leach solutions (RMAL 2303 and RMAL 2382). Average matrix density was 1.676 ± 0.008 g/cm³. The measured value of 2.1 exposed kernels came from 3 defective particles. 3/246840 corresponds to a uranium contamination fraction of <3.2e-5 at 95% confidence, which is above the specified limit. This non-conformance was documented on INL NCR-44791 with a disposition of use as is. A 1/61710 defective IPyC coating fraction corresponds to <7.7e-5 at 95% confidence. Five other particles with minor uranium dispersion were also observed, but not counted as defects according to the visual standard used in this analysis procedure. Six other anomalous particles showed features in the x-ray images that looked similar to uranium dispersion, but further analysis indicated that this was most likely due to metallic contamination on the kernel surface. Analysis of this contamination showed the presence of Fe and Cr. This metallic contamination could lead to failure of the SiC during irradiation, but is not related to defective IPyC.</p>


QC Supervisor

Accept compact lot (Yes or No): ☒ Yes

3-12-10
Date

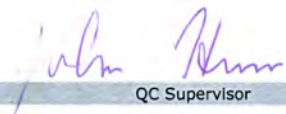

QA Reviewer

3/12/10
Date

Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	043, 202, 168, 112, 033	145, 027, 105, 119, 167	137, 064, 175, 009, 195	148, 149, 035, 048, 038	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	10.55	10.71	10.14	10.14		
Burn-leach (DRF-26B) (µg):	4.24	4.39	6.08	4.33		
Total leached (µg):	14.79	15.10	16.21	14.46		
Fe outside SiC (µg/compact):	2.96	3.02	3.24	2.89	3.03	0.15
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	1.68	1.31	1.21	0.73		
Burn-leach (DRF-26B) (µg):	0.47	0.50	0.39	0.39		
Total leached (µg):	2.15	1.81	1.60	1.13		
Cr outside SiC (µg/compact):	0.43	0.36	0.32	0.23	0.33	0.09
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.49	0.50	0.48	0.47		
Burn-leach (DRF-26B) (µg):	0.20	0.20	0.19	0.20		
Total leached (µg):	0.69	0.69	0.67	0.67		
Mn outside SiC (µg/compact):	0.14	0.14	0.13	0.13	0.136	0.002
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.41	0.42	0.40	0.40		
Burn-leach (DRF-26B) (µg):	0.17	0.17	0.16	0.17		
Total leached (µg):	0.58	0.59	0.56	0.57		
Co outside SiC (µg/compact):	0.12	0.12	0.11	0.11	0.115	0.002
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	2.05	2.08	1.97	1.97		
Burn-leach (DRF-26B) (µg):	0.91	0.95	0.85	0.84		
Total leached (µg):	2.96	3.03	2.82	2.81		
Ni outside SiC (µg/compact):	0.59	0.61	0.56	0.56	0.58	0.02
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):	1.28	1.22	1.13	1.03	1.17	0.11
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	126.49	79.96	69.36	74.34		
Burn-leach (DRF-26B) (µg):	85.60	95.34	84.78	86.42		
Total leached (µg):	212.09	175.31	154.14	160.76		
Ca outside SiC (µg/compact):	42.42	35.06	30.83	32.15	35.11	5.18
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	109.28	108.47	100.34	93.75		
Burn-leach (DRF-26B) (µg):	84.50	89.14	92.70	86.60		
Total leached (µg):	193.78	197.61	193.05	180.34		
Al outside SiC (µg/compact):	38.76	39.52	38.61	36.07	38.24	1.50
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	8.15	7.71	6.71	2.34		
Burn-leach (DRF-26B) (µg):	4.24	5.03	6.04	5.94		
Total leached (µg):	12.40	12.74	12.75	8.28		
Ti outside SiC (µg/compact):	2.48	2.55	2.55	1.66	2.31	0.44
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	37.55	38.02	37.21	34.58		
Burn-leach (DRF-26B) (µg):	33.92	36.75	37.38	37.38		
Total leached (µg):	71.47	74.76	74.59	71.96		
V outside SiC (µg/compact):	14.29	14.95	14.92	14.39	14.64	0.34
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):	16.77	17.50	17.47	16.05	16.95	0.69


 QC Supervisor

 3-11-10
 Date

Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	200, 037, 153, 157, 012	109, 011, 124, 070, 056	158, 031, 095, 041, 154	004, 166, 040, 067, 142	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	5.19	5.03	5.23	5.23		
Burn-leach (DRF-26B) (µg):	4.74	4.09	4.71	4.18		
Total leached (µg):	9.93	9.11	9.94	9.41		
Fe outside SiC (µg/compact):	1.99	1.82	1.99	1.88	1.92	0.08
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	2.92	3.03	2.75	2.80		
Burn-leach (DRF-26B) (µg):	0.50	0.45	0.41	0.37		
Total leached (µg):	3.42	3.47	3.17	3.17		
Cr outside SiC (µg/compact):	0.68	0.69	0.63	0.63	0.66	0.03
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.49	0.45	0.49	0.47		
Burn-leach (DRF-26B) (µg):	0.19	0.19	0.20	0.19		
Total leached (µg):	0.68	0.64	0.69	0.66		
Mn outside SiC (µg/compact):	0.14	0.13	0.14	0.13	0.133	0.004
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.41	0.38	0.41	0.40		
Burn-leach (DRF-26B) (µg):	0.16	0.16	0.17	0.16		
Total leached (µg):	0.57	0.54	0.58	0.56		
Co outside SiC (µg/compact):	0.11	0.11	0.12	0.11	0.113	0.004
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	2.03	1.88	2.05	1.95		
Burn-leach (DRF-26B) (µg):	0.87	0.83	0.85	0.81		
Total leached (µg):	2.91	2.71	2.90	2.76		
Ni outside SiC (µg/compact):	0.58	0.54	0.58	0.55	0.56	0.02
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):	1.52	1.47	1.47	1.43	1.47	0.03
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	165.79	63.77	113.88	102.94		
Burn-leach (DRF-26B) (µg):	76.72	79.86	73.90	81.83		
Total leached (µg):	242.52	143.63	187.79	184.77		
Ca outside SiC (µg/compact):	48.50	28.73	37.56	36.95	37.94	8.12
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	145.80	131.57	152.03	157.06		
Burn-leach (DRF-26B) (µg):	99.35	84.92	86.86	90.06		
Total leached (µg):	245.15	216.49	238.89	247.12		
Al outside SiC (µg/compact):	49.03	43.30	47.78	49.42	47.38	2.81
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	15.79	14.22	16.79	9.07		
Burn-leach (DRF-26B) (µg):	5.75	6.18	4.08	9.16		
Total leached (µg):	21.54	20.40	20.87	18.23		
Ti outside SiC (µg/compact):	4.31	4.08	4.17	3.65	4.05	0.29
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	48.46	47.99	48.83	51.59		
Burn-leach (DRF-26B) (µg):	36.89	35.82	33.96	38.25		
Total leached (µg):	85.35	83.82	82.79	89.84		
V outside SiC (µg/compact):	17.07	16.76	16.56	17.97	17.09	0.62
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):	21.38	20.84	20.73	21.61	21.14	0.42

[Signature]
QC Supervisor

3-11-10

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Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	069, 087, 046, 081, 194	116, 187, 189, 028, 185	103, 139, 016, 039, 108	088, 061, 042, 002, 080	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	10.22	10.14	10.14	9.81		
Burn-leach (DRF-26B) (µg):	9.11	4.20	4.19	4.13		
Total leached (µg):	19.32	14.33	14.33	13.94		
Fe outside SiC (µg/compact):	3.86	2.87	2.87	2.79	3.10	0.51
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	1.69	1.61	1.55	1.96		
Burn-leach (DRF-26B) (µg):	0.52	0.34	0.39	0.50		
Total leached (µg):	2.21	1.95	1.94	2.46		
Cr outside SiC (µg/compact):	0.44	0.39	0.39	0.49	0.43	0.05
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.47	0.47	0.47	0.45		
Burn-leach (DRF-26B) (µg):	0.19	0.19	0.19	0.19		
Total leached (µg):	0.66	0.66	0.66	0.65		
Mn outside SiC (µg/compact):	0.13	0.13	0.13	0.13	0.132	0.002
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.40	0.40	0.40	0.39		
Burn-leach (DRF-26B) (µg):	0.16	0.17	0.16	0.16		
Total leached (µg):	0.56	0.56	0.56	0.55		
Co outside SiC (µg/compact):	0.11	0.11	0.11	0.11	0.112	0.002
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	1.98	1.97	1.97	2.87		
Burn-leach (DRF-26B) (µg):	0.93	0.82	0.84	0.97		
Total leached (µg):	2.91	2.78	2.81	3.84		
Ni outside SiC (µg/compact):	0.58	0.56	0.56	0.77	0.62	0.10
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):	1.27	1.19	1.20	1.50	1.29	0.14
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	52.64	46.07	39.28	24.20		
Burn-leach (DRF-26B) (µg):	90.21	57.48	153.14	94.79		
Total leached (µg):	142.84	103.55	192.42	119.00		
Ca outside SiC (µg/compact):	28.57	20.71	38.48	23.80	27.89	7.77
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	123.99	112.17	119.36	119.64		
Burn-leach (DRF-26B) (µg):	215.74	82.79	86.33	88.19		
Total leached (µg):	339.74	194.97	205.69	207.82		
Al outside SiC (µg/compact):	67.95	38.99	41.14	41.56	47.41	13.74
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	12.45	11.98	11.49	11.40		
Burn-leach (DRF-26B) (µg):	7.20	5.98	6.06	6.56		
Total leached (µg):	19.65	17.96	17.54	17.96		
Ti outside SiC (µg/compact):	3.93	3.59	3.51	3.59	3.66	0.19
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	44.27	43.39	41.30	42.52		
Burn-leach (DRF-26B) (µg):	36.57	35.93	37.46	33.99		
Total leached (µg):	80.84	79.32	78.77	76.52		
V outside SiC (µg/compact):	16.17	15.86	15.75	15.30	15.77	0.36
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):	20.10	19.46	19.26	18.90	19.43	0.50

[Signature]
QC Supervisor

3-11-10

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Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	120, 184, 049, 144, 076	203, 096, 114, 191, 022	171, 161, 025, 093, 117	138, 141, 005, 084, 021	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	10.38	9.89	10.22	9.85		
Burn-leach (DRF-26B) (µg):	4.27	4.22	4.35	6.26		
Total leached (µg):	14.66	14.11	14.57	16.11		
Fe outside SiC (µg/compact):	2.93	2.82	2.91	3.22	2.97	0.17
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	2.31	1.76	2.11	1.86		
Burn-leach (DRF-26B) (µg):	0.49	0.39	0.43	0.46		
Total leached (µg):	2.80	2.15	2.54	2.32		
Cr outside SiC (µg/compact):	0.56	0.43	0.51	0.46	0.49	0.06
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.48	0.46	0.47	0.46		
Burn-leach (DRF-26B) (µg):	0.19	0.20	0.19	0.19		
Total leached (µg):	0.68	0.65	0.67	0.65		
Mn outside SiC (µg/compact):	0.14	0.13	0.13	0.13	0.132	0.003
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.41	0.39	0.40	0.39		
Burn-leach (DRF-26B) (µg):	0.17	0.17	0.16	0.16		
Total leached (µg):	0.57	0.55	0.56	0.55		
Co outside SiC (µg/compact):	0.11	0.11	0.11	0.11	0.112	0.002
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	2.02	1.92	1.98	1.91		
Burn-leach (DRF-26B) (µg):	0.90	0.95	0.90	1.05		
Total leached (µg):	2.92	2.87	2.89	2.97		
Ni outside SiC (µg/compact):	0.58	0.57	0.58	0.59	0.58	0.01
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):	1.39	1.24	1.33	1.30	1.32	0.06
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	164.40	73.22	134.33	81.74		
Burn-leach (DRF-26B) (µg):	74.43	89.31	74.99	101.54		
Total leached (µg):	238.82	162.53	209.31	183.27		
Ca outside SiC (µg/compact):	47.76	32.51	41.86	36.65	39.70	6.60
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	85.60	83.58	97.95	101.19		
Burn-leach (DRF-26B) (µg):	86.59	98.17	108.76	92.80		
Total leached (µg):	172.19	181.75	206.71	193.99		
Al outside SiC (µg/compact):	34.44	36.35	41.34	38.80	37.73	3.00
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	9.34	7.14	9.45	8.62		
Burn-leach (DRF-26B) (µg):	5.66	10.16	7.02	6.96		
Total leached (µg):	15.00	17.30	16.47	15.59		
Ti outside SiC (µg/compact):	3.00	3.46	3.29	3.12	3.22	0.20
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	31.02	29.47	34.65	32.84		
Burn-leach (DRF-26B) (µg):	36.82	42.22	41.46	33.94		
Total leached (µg):	67.84	71.69	76.12	66.78		
V outside SiC (µg/compact):	13.57	14.34	15.22	13.36	14.12	0.85
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):	16.57	17.80	18.52	16.47	17.34	0.99

John K...
QC Supervisor

3-11-10
Date

Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	104, 014, 143, 068, 125	071, 165, 199, 176, 130	059, 100, 177, 090, 024	123, 131, 006, 083, 017	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	10.22	9.76	10.26	10.14		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Fe outside SiC (µg/compact):						
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	3.32	2.91	2.68	2.94		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Cr outside SiC (µg/compact):						
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.47	0.45	0.48	0.47		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Mn outside SiC (µg/compact):						
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.40	0.38	0.40	0.40		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Co outside SiC (µg/compact):						
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	1.98	1.90	1.99	1.97		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ni outside SiC (µg/compact):						
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):						
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	160.03	72.30	73.24	127.00		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ca outside SiC (µg/compact):						
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	128.25	103.71	106.92	108.07		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Al outside SiC (µg/compact):						
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	10.62	8.27	8.83	8.87		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ti outside SiC (µg/compact):						
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	34.05	34.71	32.95	36.05		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
V outside SiC (µg/compact):						
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):						

[Signature]
QC Supervisor

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Date

Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	094, 118, 053, 159, 126	164, 172, 015, 196, 192	073, 107, 082, 201, 058	099, 102, 169, 013, 055	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	10.14	10.38	10.09	9.93		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Fe outside SiC (µg/compact):						
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	2.84	2.97	2.39	2.47		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Cr outside SiC (µg/compact):						
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.47	0.48	0.47	0.46		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Mn outside SiC (µg/compact):						
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.40	0.41	0.40	0.39		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Co outside SiC (µg/compact):						
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	1.97	2.02	1.96	1.93		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ni outside SiC (µg/compact):						
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):						
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	141.21	79.46	69.26	98.00		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ca outside SiC (µg/compact):						
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	117.14	93.70	97.60	98.96		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Al outside SiC (µg/compact):						
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	10.92	10.67	9.41	9.98		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ti outside SiC (µg/compact):						
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	37.30	35.16	34.43	35.73		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
V outside SiC (µg/compact):						
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):						

John K. K...
QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	163, 122, 097, 023, 030	086, 026, 019, 020, 063	115, 170, 162, 007, 008	182, 057, 092, 178, 156	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	14.92	10.05	10.01	10.01		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Fe outside SiC (µg/compact):						
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	2.58	2.12	2.18	2.14		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Cr outside SiC (µg/compact):						
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.46	0.47	0.46	0.46		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Mn outside SiC (µg/compact):						
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.39	0.40	0.39	0.39		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Co outside SiC (µg/compact):						
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	1.92	1.95	1.94	1.94		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ni outside SiC (µg/compact):						
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):						
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	79.57	31.02	54.72	116.88		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ca outside SiC (µg/compact):						
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	131.03	99.43	110.43	118.32		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Al outside SiC (µg/compact):						
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	11.83	9.42	10.90	9.15		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ti outside SiC (µg/compact):						
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	39.36	38.13	40.31	39.20		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
V outside SiC (µg/compact):						
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):						

John Hume
QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12B: Summary of Impurities Outside SiC - Maximum Corrected Values

Procedure:	AGR-CHAR-PIP-12 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	044, 010, 121, 054, 174	134, 047, 173, 003, 190	129, 128, 155, 052, 077	111, 060, 146, 179, 051	Mean	Standard Deviation
Number of compacts:	5	5	5	5		
Iron						
Deconsolidation-leach (DRF-26A) (µg):	10.05	9.76	10.42	9.85		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Fe outside SiC (µg/compact):						
Chromium						
Deconsolidation-leach (DRF-26A) (µg):	2.39	2.07	2.20	2.39		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Cr outside SiC (µg/compact):						
Manganese						
Deconsolidation-leach (DRF-26A) (µg):	0.94	1.10	0.48	0.46		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Mn outside SiC (µg/compact):						
Cobalt						
Deconsolidation-leach (DRF-26A) (µg):	0.40	0.38	0.41	0.39		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Co outside SiC (µg/compact):						
Nickel						
Deconsolidation-leach (DRF-26A) (µg):	1.96	1.90	2.02	1.91		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ni outside SiC (µg/compact):						
Transition Metals						
Cr+Mn+Co+Ni outside SiC (µg/compact):						
Calcium						
Deconsolidation-leach (DRF-26A) (µg):	23.52	256.63	28.64	4.31		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ca outside SiC (µg/compact):						
Aluminum						
Deconsolidation-leach (DRF-26A) (µg):	132.52	113.05	110.21	101.71		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Al outside SiC (µg/compact):						
Titanium						
Deconsolidation-leach (DRF-26A) (µg):	12.72	8.93	9.91	9.40		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
Ti outside SiC (µg/compact):						
Vanadium						
Deconsolidation-leach (DRF-26A) (µg):	40.71	37.55	42.47	41.33		
Burn-leach (DRF-26B) (µg):						
Total leached (µg):						
V outside SiC (µg/compact):						
Titanium and Vanadium						
Ti + V outside SiC (µg/compact):						

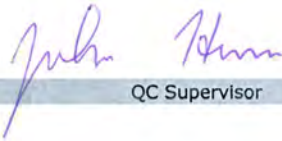
John Kim
QC Supervisor

3-11-10
Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	043, 202, 168, 112, 033	145, 027, 105, 119, 167	137, 064, 175, 009, 195	148, 149, 035, 048, 038	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	0.0	0.0	0.0	0.0



QC Supervisor

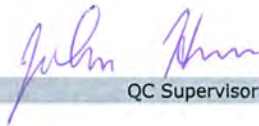
3-11-10

Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	200, 037, 153, 157, 012	109, 011, 124, 070, 056	158, 031, 095, 041, 154	004, 166, 040, 067, 142	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	0.0	0.0	0.0	0.0


QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	069, 087, 046, 081, 194	116, 187, 189, 028, 185	103, 139, 016, 039, 108	088, 061, 042, 002, 080	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	1.0	0.0	0.0	1.0

John Kim
QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	120, 184, 049, 144, 076	203, 096, 114, 191, 022	171, 161, 025, 093, 117	138, 141, 005, 084, 021	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	0.0	0.0	0.0	0.0

John R. Hume
QC Supervisor

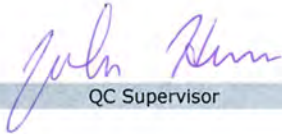
3-11-10

Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	104, 014, 143, 068, 125	071, 165, 199, 176, 130	059, 100, 177, 090, 024	123, 131, 006, 083, 017	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	0.0	0.0	0.8	0.8


QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	094, 118, 053, 159, 126	164, 172, 015, 196, 192	073, 107, 082, 201, 058	099, 102, 169, 013, 055	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	0.0	0.0	0.0	0.0

John Hume
QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	163, 122, 097, 023, 030	086, 026, 019, 020, 063	115, 170, 162, 007, 008	182, 057, 092, 178, 156	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	0.0	0.0	0.0	0.0

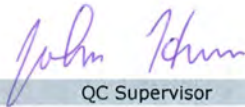
John Krum
QC Supervisor

3-11-10
Date

Inspection Report Form IRF-12C: Summary of Uranium Contamination

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	044, 010, 121, 054, 174	134, 047, 173, 003, 190	129, 128, 155, 052, 077	111, 060, 146, 179, 051	Total
Number of compacts:	5	5	5	5	20
Effective number of exposed kernels:	0.0	0.3	0.0	0.0	0.3



QC Supervisor

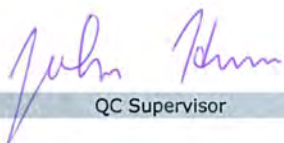
3-11-10

Date

Inspection Report Form IRF-12D: Summary of Burn Leach Defects

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	043, 202, 168, 112, 033	145, 027, 105, 119, 167	137, 064, 175, 009, 195	148, 149, 035, 048, 038	Total
Number of compacts:	5	5	5	5	20
Number of leached kernels:	0	0	0	0	0



QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12D: Summary of Burn Leach Defects

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	200, 037, 153, 157, 012	109, 011, 124, 070, 056	158, 031, 095, 041, 154	004, 166, 040, 067, 142	Total
Number of compacts:	5	5	5	5	20
Number of leached kernels:	0	0	0	0	0



QC Supervisor

3-11-10

Date

Inspection Report Form IRF-12D: Summary of Burn Leach Defects

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	069, 087, 046, 081, 194	116, 187, 189, 028, 185	103, 139, 016, 039, 108	088, 061, 042, 002, 080	Total
Number of compacts:	5	5	5	5	20
Number of leached kernels:	0	0	0	0	0

John R. Kinn
QC Supervisor

3-11-10
Date

Inspection Report Form IRF-12D: Summary of Burn Leach Defects

Procedure:	AGR-CHAR-PIP-12 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B

Compact ID numbers:	120, 184, 049, 144, 076	203, 096, 114, 191, 022	171, 161, 025, 093, 117	138, 141, 005, 084, 021	Total
Number of compacts:	5	5	5	5	20
Number of leached kernels:	0	0	0	0	0

John Hume
QC Supervisor

3-11-10

Date



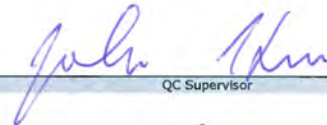


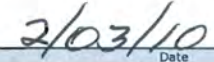
Data Report Form DRF-24A: Compact Diameter and Length

Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-930858
Filename:	\\mc-aqr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls
Vertical height gauge calibration due date:	3/6/10
Pass-thru block calibration due date:	1/17/11
Digital caliper calibration due date:	7/7/10
Gauge blocks calibration due date:	11/7/12
Analytical balance calibration due date:	2/12/10

Acceptance criteria for compact length:	≥ 25.02 and ≤ 25.40 mm
Acceptance criteria for compact diameter:	≥ 12.22 and ≤ 12.46 mm (and pass through 12.46 mm ring gauge)
Acceptance criteria for compact mass:	For information only

Compact ID Number	Length (mm)	Diameter (mm)						Pass Thru? (Y or N)	Compact weight (g)	Accept? (pass or fail)
		Top 1	Top 2	Middle 1	Middle 2	Bottom 1	Bottom 2			
Z001	25.143	12.27	12.27	12.28	12.28	12.27	12.27	y	6.0964	pass
Z002	25.157	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1062	pass
Z003	25.120	12.28	12.28	12.27	12.29	12.28	12.28	y	6.1085	pass
Z004	25.152	12.26	12.27	12.27	12.26	12.27	12.26	y	6.1391	pass
Z005	25.147	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1015	pass
Z006	25.102	12.26	12.26	12.27	12.27	12.27	12.26	y	6.0972	pass
Z007	25.079	12.26	12.26	12.27	12.28	12.27	12.27	y	6.0897	pass
Z008	25.092	12.27	12.27	12.27	12.28	12.27	12.28	y	6.0936	pass
Z009	25.142	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1066	pass
Z010	25.135	12.27	12.27	12.28	12.27	12.27	12.27	y	6.0934	pass
Z011	25.123	12.28	12.27	12.27	12.27	12.27	12.27	y	6.0987	pass
Z012	25.142	12.26	12.26	12.26	12.26	12.27	12.27	y	6.1013	pass
Z013	25.125	12.28	12.28	12.28	12.27	12.27	12.27	y	6.0958	pass
Z014	25.126	12.28	12.28	12.28	12.28	12.28	12.27	y	6.0791	pass
Z015	25.163	12.27	12.28	12.27	12.27	12.27	12.27	y	6.0893	pass
Z016	25.140	12.26	12.26	12.27	12.27	12.27	12.27	y	6.0936	pass
Z017	25.121	12.27	12.27	12.27	12.28	12.28	12.28	y	6.0878	pass
Z018	25.121	12.28	12.28	12.28	12.29	12.28	12.28	y	6.0958	pass
Z019	25.140	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1200	pass
Z020	25.126	12.28	12.27	12.27	12.27	12.28	12.27	y	6.1045	pass
Z021	25.146	12.27	12.27	12.27	12.27	12.28	12.27	y	6.0851	pass
Z022	25.142	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0883	pass
Z023	25.129	12.27	12.26	12.27	12.27	12.28	12.27	y	6.0959	pass
Z024	25.101	12.28	12.28	12.28	12.28	12.27	12.27	y	6.0929	pass
Z025	25.135	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0873	pass
Z026	25.123	12.27	12.28	12.28	12.28	12.27	12.28	y	6.0895	pass
Z027	25.123	12.28	12.28	12.28	12.27	12.27	12.27	y	6.0960	pass
Z028	25.162	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1439	pass
Z029	25.147	12.26	12.27	12.27	12.27	12.27	12.27	y	6.1439	pass
Z030	25.142	12.28	12.28	12.28	12.28	12.28	12.28	y	6.0887	pass
Z031	25.126	12.27	12.26	12.27	12.27	12.27	12.26	y	6.1289	pass
Z032	25.124	12.26	12.26	12.27	12.27	12.27	12.27	y	6.0971	pass
Z033	25.132	12.26	12.26	12.27	12.27	12.26	12.27	y	6.0935	pass
Z034	25.130	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0940	pass
Z035	25.166	12.26	12.26	12.27	12.27	12.27	12.27	y	6.1329	pass
Z036	25.132	12.26	12.27	12.27	12.27	12.27	12.28	y	6.0949	pass
Z037	25.146	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0980	pass
Z038	25.153	12.27	12.28	12.27	12.27	12.27	12.28	y	6.0903	pass
Z039	25.133	12.28	12.27	12.27	12.28	12.28	12.28	y	6.0786	pass
Z040	25.124	12.26	12.26	12.27	12.27	12.27	12.27	y	6.1006	pass
Z041	25.148	12.27	12.27	12.28	12.28	12.28	12.27	y	6.0920	pass
Z042	25.123	12.26	12.26	12.26	12.27	12.27	12.27	y	6.0867	pass
Z043	25.143	12.28	12.27	12.28	12.28	12.27	12.28	y	6.0907	pass
Z044	25.135	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0981	pass
Z045	25.148	12.28	12.28	12.28	12.28	12.28	12.27	y	6.1382	pass
Z046	25.110	12.28	12.28	12.28	12.27	12.27	12.27	y	6.0734	pass
Z047	25.128	12.27	12.27	12.27	12.27	12.28	12.27	y	6.0965	pass
Z048	25.110	12.28	12.28	12.28	12.28	12.27	12.27	y	6.1145	pass
Z049	25.079	12.27	12.27	12.28	12.27	12.27	12.27	y	6.0772	pass
Z050	25.168	12.25	12.26	12.25	12.26	12.26	12.26	y	6.1225	pass

Comments

	
Operator	Date
	
QC Supervisor	Date
	
QA Reviewer	Date

Data Report Form DRF-24A: Compact Diameter and Length

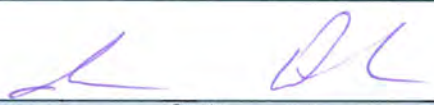

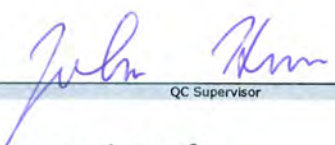
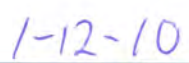


Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Vertical height gauge calibration due date:	3/6/10
Pass-thru block calibration due date:	1/17/11
Digital caliper calibration due date:	7/7/10
Gauge blocks calibration due date:	11/7/12
Analytical balance calibration due date:	2/12/10

Acceptance criteria for compact length:	≥ 25.02 and ≤ 25.40 mm
Acceptance criteria for compact diameter:	≥ 12.22 and ≤ 12.46 mm (and pass through 12.46 mm ring gauge)
Acceptance criteria for compact mass:	For information only

Compact ID Number	Length (mm)	Diameter (mm)						Pass Thru? (Y or N)	Compact weight (g)	Accept? (pass or fail)
		Top 1	Top 2	Middle 1	Middle 2	Bottom 1	Bottom 2			
Z051	25.132	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0928	pass
Z052	25.159	12.25	12.25	12.26	12.26	12.26	12.25	y	6.0996	pass
Z053	25.120	12.26	12.25	12.25	12.25	12.26	12.26	y	6.0981	pass
Z054	25.092	12.26	12.26	12.26	12.26	12.26	12.25	y	6.0927	pass
Z055	25.171	12.25	12.25	12.26	12.25	12.26	12.25	y	6.1321	pass
Z056	25.076	12.25	12.26	12.26	12.27	12.26	12.25	y	6.0842	pass
Z057	25.147	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0935	pass
Z058	25.128	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0967	pass
Z059	25.137	12.25	12.25	12.26	12.26	12.26	12.26	y	6.0945	pass
Z060	25.139	12.26	12.26	12.25	12.26	12.26	12.26	y	6.1004	pass
Z061	25.142	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0851	pass
Z062	25.152	12.25	12.25	12.26	12.26	12.25	12.25	y	6.0977	pass
Z063	25.124	12.25	12.25	12.26	12.26	12.26	12.26	y	6.0835	pass
Z064	25.137	12.27	12.27	12.27	12.28	12.28	12.28	y	6.1057	pass
Z065	25.144	12.26	12.26	12.26	12.26	12.27	12.27	y	6.1069	pass
Z066	25.120	12.25	12.25	12.26	12.26	12.26	12.25	y	6.0532	pass
Z067	25.110	12.25	12.25	12.26	12.26	12.25	12.25	y	6.0887	pass
Z068	25.142	12.26	12.26	12.26	12.26	12.26	12.26	y	6.1062	pass
Z069	25.147	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0954	pass
Z070	25.153	12.26	12.26	12.26	12.26	12.27	12.27	y	6.1011	pass
Z071	25.126	12.26	12.27	12.26	12.26	12.26	12.26	y	6.0853	pass
Z072	25.124	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0958	pass
Z073	25.128	12.26	12.27	12.26	12.26	12.26	12.26	y	6.0926	pass
Z074	25.112	12.25	12.25	12.25	12.26	12.26	12.26	y	6.0903	pass
Z075	25.102	12.26	12.25	12.26	12.25	12.26	12.26	y	6.0936	pass
Z076	25.088	12.25	12.25	12.26	12.25	12.25	12.25	y	6.1001	pass
Z077	25.135	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0941	pass
Z078	25.107	12.26	12.26	12.26	12.27	12.26	12.26	y	6.0868	pass
Z079	25.137	12.26	12.26	12.26	12.26	12.26	12.25	y	6.0941	pass
Z080	25.140	12.26	12.25	12.25	12.26	12.26	12.26	y	6.1068	pass
Z081	25.142	12.25	12.25	12.26	12.26	12.26	12.26	y	6.0883	pass
Z082	25.158	12.27	12.27	12.26	12.27	12.26	12.26	y	6.1043	pass
Z083	25.125	12.26	12.26	12.26	12.26	12.25	12.25	y	6.0921	pass
Z084	25.133	12.26	12.26	12.26	12.26	12.27	12.26	y	6.0846	pass
Z085	25.147	12.26	12.26	12.25	12.26	12.25	12.25	y	6.0969	pass
Z086	25.184	12.26	12.26	12.25	12.26	12.26	12.25	y	6.1390	pass
Z087	25.128	12.26	12.26	12.26	12.26	12.26	12.27	y	6.0842	pass
Z088	25.114	12.25	12.25	12.26	12.26	12.25	12.25	y	6.0970	pass
Z089	25.138	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0965	pass
Z090	25.106	12.26	12.26	12.26	12.26	12.26	12.25	y	6.0858	pass
Z091	25.135	12.25	12.26	12.25	12.26	12.25	12.25	y	6.0866	pass
Z092	25.167	12.25	12.25	12.26	12.26	12.26	12.26	y	6.1102	pass
Z093	25.137	12.26	12.26	12.26	12.27	12.27	12.26	y	6.0899	pass
Z094	25.147	12.25	12.25	12.25	12.26	12.26	12.25	y	6.1341	pass
Z095	25.144	12.27	12.26	12.27	12.27	12.26	12.27	y	6.1043	pass
Z096	25.111	12.25	12.25	12.26	12.26	12.26	12.26	y	6.1043	pass
Z097	25.128	12.26	12.25	12.25	12.25	12.25	12.25	y	6.0950	pass
Z098	25.180	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1224	pass
Z099	25.114	12.26	12.27	12.27	12.27	12.27	12.26	y	6.0865	pass
Z100	25.132	12.25	12.25	12.25	12.26	12.26	12.25	y	6.1354	pass

Comments

	
Operator	Date
	
QC Supervisor	Date
	
QA Reviewer	Date

Data Report Form DRF-24A: Compact Diameter and Length


Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Vertical height gauge calibration due date:	3/6/10
Pass-thru block calibration due date:	1/17/11
Digital caliper calibration due date:	7/7/10
Gauge blocks calibration due date:	11/7/12
Analytical balance calibration due date:	2/12/10

Acceptance criteria for compact length:	≥ 25.02 and ≤ 25.40 mm
Acceptance criteria for compact diameter:	≥ 12.22 and ≤ 12.46 mm (and pass through 12.46 mm ring gauge)
Acceptance criteria for compact mass:	For information only

Compact ID Number	Length (mm)	Diameter (mm)						Pass Thru? (Y or N)	Compact weight (g)	Accept? (pass or fail)
		Top 1	Top 2	Middle 1	Middle 2	Bottom 1	Bottom 2			
Z101	25.100	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0922	pass
Z102	25.095	12.25	12.25	12.25	12.25	12.25	12.25	y	6.0919	pass
Z103	25.114	12.26	12.27	12.27	12.28	12.27	12.27	y	6.1294	pass
Z104	25.142	12.26	12.26	12.27	12.27	12.27	12.27	y	6.1022	pass
Z105	25.138	12.27	12.28	12.27	12.27	12.28	12.28	y	6.0773	pass
Z106	25.147	12.27	12.27	12.26	12.27	12.26	12.27	y	6.1068	pass
Z107	25.135	12.26	12.25	12.26	12.26	12.26	12.26	y	6.0866	pass
Z108	25.109	12.26	12.26	12.26	12.27	12.26	12.26	y	6.1399	pass
Z109	25.123	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0896	pass
Z110	25.126	12.25	12.25	12.26	12.25	12.26	12.25	y	6.0995	pass
Z111	25.151	12.27	12.27	12.27	12.28	12.27	12.27	y	6.1015	pass
Z112	25.099	12.27	12.27	12.26	12.26	12.27	12.27	y	6.1339	pass
Z113	25.123	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0856	pass
Z114	25.144	12.27	12.27	12.28	12.27	12.27	12.26	y	6.0762	pass
Z115	25.167	12.27	12.27	12.26	12.27	12.26	12.26	y	6.1022	pass
Z116	25.147	12.26	12.27	12.26	12.27	12.27	12.26	y	6.0924	pass
Z117	25.142	12.26	12.27	12.27	12.26	12.27	12.27	y	6.0856	pass
Z118	25.123	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0896	pass
Z119	25.099	12.27	12.27	12.28	12.27	12.27	12.27	y	6.0741	pass
Z120	25.096	12.27	12.26	12.27	12.27	12.26	12.26	y	6.0703	pass
Z121	25.143	12.26	12.26	12.26	12.27	12.26	12.25	y	6.0950	pass
Z122	25.171	12.26	12.26	12.26	12.26	12.25	12.26	y	6.1342	pass
Z123	25.129	12.26	12.26	12.26	12.26	12.26	12.27	y	6.0978	pass
Z124	25.125	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1039	pass
Z125	25.133	12.26	12.27	12.27	12.27	12.26	12.27	y	6.0853	pass
Z126	25.132	12.25	12.25	12.25	12.26	12.26	12.26	y	6.1411	pass
Z127	25.137	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1158	pass
Z128	25.140	12.26	12.26	12.27	12.26	12.26	12.25	y	6.0947	pass
Z129	25.143	12.27	12.27	12.27	12.27	12.28	12.28	y	6.1264	pass
Z130	25.149	12.28	12.28	12.27	12.27	12.27	12.27	y	6.1025	pass
Z131	25.109	12.26	12.27	12.28	12.27	12.28	12.27	y	6.0870	pass
Z132	25.162	12.27	12.27	12.27	12.27	12.27	12.28	y	6.1354	pass
Z133	25.111	12.27	12.27	12.28	12.28	12.28	12.27	y	6.0952	pass
Z134	25.146	12.28	12.28	12.28	12.28	12.28	12.28	y	6.0790	pass
Z135	25.128	12.26	12.26	12.26	12.26	12.25	12.26	y	6.1198	pass
Z136	25.157	12.28	12.27	12.28	12.27	12.28	12.28	y	6.0966	pass
Z137	25.149	12.28	12.27	12.28	12.28	12.28	12.29	y	6.1086	pass
Z138	25.110	12.28	12.28	12.28	12.28	12.27	12.28	y	6.0970	pass
Z139	25.101	12.27	12.28	12.28	12.28	12.27	12.27	y	6.0918	pass
Z140	25.144	12.27	12.27	12.27	12.28	12.28	12.28	y	6.1372	pass
Z141	25.125	12.28	12.29	12.28	12.28	12.28	12.28	y	6.0982	pass
Z142	25.146	12.28	12.29	12.29	12.29	12.29	12.28	y	6.0985	pass
Z143	25.201	12.28	12.28	12.29	12.29	12.28	12.28	y	6.1088	pass
Z144	25.151	12.27	12.27	12.27	12.27	12.27	12.28	y	6.0896	pass
Z145	25.161	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0878	pass
Z146	25.128	12.27	12.28	12.27	12.27	12.27	12.27	y	6.0920	pass
Z147	25.100	12.28	12.28	12.28	12.28	12.28	12.28	y	6.1164	pass
Z148	25.133	12.28	12.28	12.27	12.27	12.27	12.27	y	6.1121	pass
Z149	25.132	12.27	12.27	12.27	12.27	12.28	12.28	y	6.0877	pass
Z150	25.126	12.27	12.27	12.27	12.27	12.27	12.27	y	6.1128	pass

Comments


Operator

9-14-09
Date


QC Supervisor

1-12-10
Date


QA Reviewer

2/03/10
Date

Data Report Form DRF-24A: Compact Diameter and Length

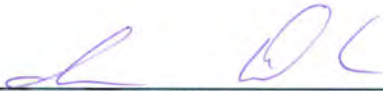

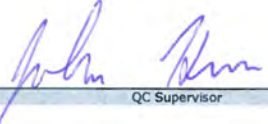



Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-930858
Filename:	\\mc-aqr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Vertical height gauge calibration due date:	3/6/10
Pass-thru block calibration due date:	1/17/11
Digital caliper calibration due date:	7/7/10
Gauge blocks calibration due date:	11/7/12
Analytical balance calibration due date:	2/12/10

Acceptance criteria for compact length:	≥ 25.02 and ≤ 25.40 mm
Acceptance criteria for compact diameter:	≥ 12.22 and ≤ 12.46 mm (and pass through 12.46 mm ring gauge)
Acceptance criteria for compact mass:	For information only

Compact ID Number	Length (mm)	Diameter (mm)						Pass Thru? (Y or N)	Compact weight (g)	Accept? (pass or fail)
		Top 1	Top 2	Middle 1	Middle 2	Bottom 1	Bottom 2			
Z151	25.104	12.25	12.25	12.25	12.25	12.26	12.25	y	6.0982	pass
Z152	25.107	12.27	12.27	12.28	12.28	12.28	12.28	y	6.0894	pass
Z153	25.152	12.27	12.27	12.28	12.28	12.27	12.27	y	6.1035	pass
Z154	25.156	12.28	12.28	12.28	12.28	12.27	12.28	y	6.1087	pass
Z155	25.143	12.28	12.27	12.28	12.28	12.27	12.28	y	6.0840	pass
Z156	25.125	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0941	pass
Z157	25.130	12.28	12.28	12.28	12.27	12.28	12.29	y	6.0844	pass
Z158	25.101	12.26	12.27	12.27	12.27	12.28	12.28	y	6.0799	pass
Z159	25.159	12.29	12.29	12.28	12.28	12.28	12.28	y	6.1297	pass
Z160	25.130	12.26	12.26	12.26	12.26	12.26	12.26	y	6.0878	pass
Z161	25.126	12.29	12.28	12.28	12.28	12.28	12.28	y	6.1107	pass
Z162	25.125	12.27	12.27	12.28	12.27	12.28	12.28	y	6.1015	pass
Z163	25.130	12.27	12.27	12.27	12.28	12.27	12.29	y	6.0932	pass
Z164	25.123	12.28	12.28	12.28	12.28	12.28	12.28	y	6.0992	pass
Z165	25.083	12.26	12.26	12.27	12.28	12.26	12.26	y	6.0912	pass
Z166	25.124	12.28	12.28	12.28	12.28	12.28	12.28	y	6.1253	pass
Z167	25.132	12.25	12.25	12.26	12.26	12.25	12.25	y	6.0908	pass
Z168	25.124	12.25	12.25	12.26	12.26	12.26	12.26	y	6.1011	pass
Z169	25.140	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0785	pass
Z170	25.168	12.27	12.27	12.28	12.28	12.27	12.28	y	6.1455	pass
Z171	25.158	12.27	12.27	12.28	12.28	12.27	12.28	y	6.1104	pass
Z172	25.111	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0897	pass
Z173	25.112	12.27	12.27	12.28	12.28	12.28	12.28	y	6.0898	pass
Z174	25.144	12.27	12.27	12.27	12.26	12.27	12.27	y	6.0965	pass
Z175	25.143	12.26	12.26	12.26	12.26	12.25	12.25	y	6.1379	pass
Z176	25.115	12.27	12.27	12.27	12.27	12.26	12.26	y	6.0979	pass
Z177	25.107	12.27	12.27	12.27	12.27	12.27	12.26	y	6.1120	pass
Z178	25.137	12.27	12.26	12.27	12.27	12.27	12.26	y	6.1436	pass
Z179	25.135	12.27	12.27	12.27	12.27	12.27	12.26	y	6.1361	pass
Z180	25.153	12.27	12.27	12.27	12.27	12.28	12.28	y	6.1018	pass
Z181	25.146	12.26	12.27	12.28	12.27	12.28	12.28	y	6.1057	pass
Z182	25.120	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0987	pass
Z183	25.152	12.27	12.28	12.28	12.28	12.27	12.27	y	6.0887	pass
Z184	25.159	12.28	12.28	12.27	12.27	12.28	12.28	y	6.0845	pass
Z185	25.105	12.27	12.28	12.28	12.28	12.27	12.27	y	6.0766	pass
Z186	25.110	12.28	12.28	12.28	12.28	12.28	12.27	y	6.0890	pass
Z187	25.159	12.27	12.27	12.27	12.27	12.28	12.28	y	6.1087	pass
Z188	25.133	12.27	12.27	12.26	12.27	12.26	12.27	y	6.1028	pass
Z189	25.124	12.27	12.27	12.27	12.27	12.27	12.28	y	6.0976	pass
Z190	25.102	12.27	12.27	12.28	12.28	12.28	12.28	y	6.0808	pass
Z191	25.134	12.27	12.27	12.28	12.27	12.27	12.27	y	6.0926	pass
Z192	25.143	12.26	12.27	12.27	12.27	12.26	12.27	y	6.0909	pass
Z193	25.115	12.27	12.27	12.27	12.27	12.27	12.27	y	6.0909	pass
Z194	25.107	12.28	12.27	12.28	12.28	12.27	12.27	y	6.0972	pass
Z195	25.107	12.28	12.27	12.28	12.28	12.27	12.27	y	6.0915	pass
Z196	25.132	12.28	12.28	12.28	12.28	12.28	12.27	y	6.0895	pass
Z197	25.142	12.27	12.27	12.28	12.28	12.28	12.28	y	6.0985	pass
Z198	25.140	12.28	12.27	12.28	12.28	12.28	12.28	y	6.0855	pass
Z199	25.143	12.26	12.26	12.26	12.26	12.27	12.27	y	6.1384	pass
Z200	25.101	12.27	12.27	12.27	12.27	12.27	12.28	y	6.0657	pass

Comments

	
Operator	Date
	
QC Supervisor	Date
	
QA Reviewer	Date

Data Report Form DRF-24A: Compact Diameter and Length

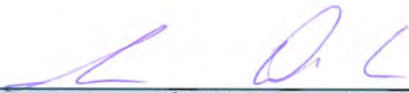
Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-aqr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Vertical height gauge calibration due date:	3/6/10
Pass-thru block calibration due date:	1/17/11
Digital caliper calibration due date:	7/7/10
Gauge blocks calibration due date:	11/7/12
Analytical balance calibration due date:	2/12/10

Acceptance criteria for compact length:	≥ 25.02 and ≤ 25.40 mm
Acceptance criteria for compact diameter:	≥ 12.22 and ≤ 12.46 mm (and pass through 12.46 mm ring gauge)
Acceptance criteria for compact mass:	For information only

Compact ID Number	Length (mm)	Diameter (mm)						Pass Thru? (Y or N)	Compact weight (g)	Accept? (pass or fail)
		Top 1	Top 2	Middle 1	Middle 2	Bottom 1	Bottom 2			
Z201	25.151	12.27	12.27	12.28	12.28	12.28	12.28	y	6.1076	pass
Z202	25.142	12.25	12.25	12.25	12.25	12.25	12.25	y	6.1375	pass
Z203	25.120	12.27	12.27	12.27	12.28	12.27	12.28	y	6.0864	pass
Z204										
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Z206										
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Z248										
Z249										
Z250										

Comments


Operator

9-14-09
Date


QC Supervisor

1-12-10
Date


QA Reviewer

2/03/10
Date

Data Report Form DRF-24B: Compact Matrix Density

Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Average weight per TRISO particle (g):	1.462E-03
Average weight per overcoated particle (g):	4.053E-03
Average TRISO particle volume (cm ³):	4.450E-04

Acceptance criteria for matrix density:	≥1.45
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Compact ID Number	Compact Weight (g)	Length (mm)	Av. Diameter (mm)	Compact Volume (cm ³)	Charge Weight (g)	Particle Weight (g)	Particle Volume (cm ³)	Packing Fraction	Matrix Density (g/cm ³)	Accept? (pass or fail)
Z001	6.0964	25.143	12.27	2.97	6.3462	2.2895	0.70	23%	1.67	pass
Z002	6.1062	25.157	12.27	2.97	6.3458	2.2895	0.70	23%	1.68	pass
Z003	6.1085	25.120	12.28	2.98	6.3448	2.2880	0.70	23%	1.68	pass
Z004	6.1391	25.152	12.27	2.97	6.3495	2.2910	0.70	23%	1.69	pass
Z005	6.1015	25.147	12.27	2.97	6.3491	2.2910	0.70	23%	1.67	pass
Z006	6.0972	25.102	12.27	2.97	6.3474	2.2895	0.70	23%	1.68	pass
Z007	6.0897	25.079	12.27	2.96	6.3470	2.2895	0.70	24%	1.68	pass
Z008	6.0936	25.092	12.27	2.97	6.3483	2.2895	0.70	23%	1.67	pass
Z009	6.1066	25.142	12.27	2.97	6.3455	2.2895	0.70	23%	1.68	pass
Z010	6.0934	25.135	12.27	2.97	6.3471	2.2895	0.70	23%	1.67	pass
Z011	6.0987	25.123	12.27	2.97	6.3470	2.2895	0.70	23%	1.67	pass
Z012	6.1013	25.142	12.26	2.97	6.3453	2.2895	0.70	23%	1.68	pass
Z013	6.0958	25.125	12.28	2.97	6.3453	2.2895	0.70	23%	1.67	pass
Z014	6.0791	25.126	12.28	2.98	6.3446	2.2880	0.70	23%	1.66	pass
Z015	6.0893	25.163	12.27	2.98	6.3460	2.2895	0.70	23%	1.67	pass
Z016	6.0936	25.140	12.27	2.97	6.3489	2.2895	0.70	23%	1.67	pass
Z017	6.0878	25.121	12.28	2.97	6.3474	2.2895	0.70	23%	1.67	pass
Z018	6.0958	25.121	12.28	2.98	6.3474	2.2895	0.70	23%	1.67	pass
Z019	6.1200	25.140	12.27	2.97	6.3488	2.2895	0.70	23%	1.68	pass
Z020	6.1045	25.126	12.27	2.97	6.3488	2.2895	0.70	23%	1.68	pass
Z021	6.0851	25.146	12.27	2.97	6.3451	2.2895	0.70	23%	1.67	pass
Z022	6.0883	25.142	12.27	2.97	6.3471	2.2895	0.70	23%	1.67	pass
Z023	6.0959	25.129	12.27	2.97	6.3487	2.2895	0.70	23%	1.67	pass
Z024	6.0929	25.101	12.28	2.97	6.3472	2.2895	0.70	23%	1.67	pass
Z025	6.0873	25.135	12.27	2.97	6.3479	2.2895	0.70	23%	1.67	pass
Z026	6.0895	25.123	12.28	2.97	6.3464	2.2895	0.70	23%	1.67	pass
Z027	6.0960	25.123	12.28	2.97	6.3466	2.2895	0.70	23%	1.67	pass
Z028	6.1439	25.162	12.27	2.98	6.3509	2.2910	0.70	23%	1.69	pass
Z029	6.1439	25.147	12.27	2.97	6.3477	2.2895	0.70	23%	1.69	pass
Z030	6.0887	25.142	12.28	2.98	6.3458	2.2895	0.70	23%	1.67	pass
Z031	6.1289	25.126	12.27	2.97	6.3441	2.2880	0.70	23%	1.69	pass
Z032	6.0971	25.124	12.27	2.97	6.3466	2.2895	0.70	23%	1.68	pass
Z033	6.0935	25.132	12.27	2.97	6.3471	2.2895	0.70	23%	1.67	pass
Z034	6.0940	25.130	12.27	2.97	6.3490	2.2895	0.70	23%	1.67	pass
Z035	6.1329	25.166	12.27	2.97	6.3461	2.2895	0.70	23%	1.69	pass
Z036	6.0949	25.132	12.27	2.97	6.3475	2.2895	0.70	23%	1.67	pass
Z037	6.0980	25.146	12.27	2.97	6.3472	2.2895	0.70	23%	1.67	pass
Z038	6.0903	25.153	12.27	2.98	6.3483	2.2895	0.70	23%	1.67	pass
Z039	6.0786	25.133	12.28	2.98	6.3462	2.2895	0.70	23%	1.66	pass
Z040	6.1006	25.124	12.27	2.97	6.3464	2.2895	0.70	23%	1.68	pass
Z041	6.0920	25.148	12.28	2.98	6.3450	2.2895	0.70	23%	1.67	pass
Z042	6.0867	25.123	12.27	2.97	6.3499	2.2910	0.70	23%	1.67	pass
Z043	6.0907	25.143	12.28	2.98	6.3468	2.2895	0.70	23%	1.67	pass
Z044	6.0981	25.135	12.27	2.97	6.3466	2.2895	0.70	23%	1.67	pass
Z045	6.1382	25.148	12.28	2.98	6.3464	2.2895	0.70	23%	1.69	pass
Z046	6.0734	25.110	12.28	2.97	6.3449	2.2880	0.70	23%	1.66	pass
Z047	6.0965	25.128	12.27	2.97	6.3458	2.2895	0.70	23%	1.67	pass
Z048	6.1145	25.110	12.28	2.97	6.3477	2.2895	0.70	23%	1.68	pass
Z049	6.0772	25.079	12.27	2.97	6.3488	2.2895	0.70	23%	1.67	pass
Z050	6.1225	25.168	12.26	2.97	6.3444	2.2880	0.70	23%	1.69	pass

Comments
Average weight per overcoated particle from combined results of 2 independent measurements (W09081401 and W09081402).

	
Operator	QC Supervisor
	
QA Reviewer	Date

Data Report Form DRF-24B: Compact Matrix Density

Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Average weight per TRISO particle (g):	1.462E-03
Average weight per overcoated particle (g):	4.053E-03
Average TRISO particle volume (cm3):	4.450E-04

Acceptance criteria for matrix density:	≥ 1.45
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Compact ID Number	Compact Weight (g)	Length (mm)	Av. Diameter (mm)	Compact Volume (cm3)	Charge Weight (g)	Particle Weight (g)	Particle Volume (cm3)	Packing Fraction	Matrix Density (g/cm3)	Accept? (pass or fail)
Z051	6.0928	25.132	12.26	2.97	6.3470	2.2895	0.70	23%	1.68	pass
Z052	6.0996	25.159	12.26	2.97	6.3460	2.2895	0.70	23%	1.68	pass
Z053	6.0981	25.120	12.26	2.96	6.3488	2.2895	0.70	24%	1.68	pass
Z054	6.0927	25.092	12.26	2.96	6.3491	2.2910	0.70	24%	1.68	pass
Z055	6.1321	25.171	12.25	2.97	6.3480	2.2895	0.70	23%	1.69	pass
Z056	6.0842	25.076	12.26	2.96	6.3479	2.2895	0.70	24%	1.68	pass
Z057	6.0935	25.147	12.26	2.97	6.3474	2.2895	0.70	23%	1.67	pass
Z058	6.0967	25.128	12.26	2.97	6.3448	2.2880	0.70	23%	1.68	pass
Z059	6.0945	25.137	12.26	2.97	6.3475	2.2895	0.70	23%	1.68	pass
Z060	6.1004	25.139	12.26	2.97	6.3467	2.2895	0.70	23%	1.68	pass
Z061	6.0851	25.142	12.26	2.97	6.3474	2.2895	0.70	23%	1.67	pass
Z062	6.0977	25.152	12.25	2.97	6.3482	2.2895	0.70	23%	1.68	pass
Z063	6.0835	25.124	12.26	2.96	6.3464	2.2895	0.70	24%	1.67	pass
Z064	6.1057	25.137	12.28	2.97	6.3498	2.2910	0.70	23%	1.68	pass
Z065	6.1069	25.144	12.26	2.97	6.3449	2.2880	0.70	23%	1.68	pass
Z066	6.0532	25.120	12.26	2.96	6.3476	2.2895	0.70	24%	1.66	pass
Z067	6.0887	25.110	12.25	2.96	6.3458	2.2895	0.70	24%	1.68	pass
Z068	6.1062	25.142	12.26	2.97	6.3466	2.2895	0.70	23%	1.68	pass
Z069	6.0954	25.147	12.26	2.97	6.3453	2.2895	0.70	23%	1.68	pass
Z070	6.1011	25.153	12.26	2.97	6.3490	2.2895	0.70	23%	1.68	pass
Z071	6.0853	25.126	12.26	2.97	6.3462	2.2895	0.70	23%	1.67	pass
Z072	6.0958	25.124	12.26	2.97	6.3463	2.2895	0.70	23%	1.68	pass
Z073	6.0926	25.128	12.26	2.97	6.3475	2.2895	0.70	23%	1.68	pass
Z074	6.0903	25.112	12.26	2.96	6.3494	2.2910	0.70	24%	1.68	pass
Z075	6.0936	25.102	12.26	2.96	6.3448	2.2880	0.70	24%	1.68	pass
Z076	6.1001	25.088	12.25	2.96	6.3489	2.2895	0.70	24%	1.69	pass
Z077	6.0941	25.135	12.26	2.97	6.3484	2.2895	0.70	23%	1.68	pass
Z078	6.0868	25.107	12.26	2.96	6.3472	2.2895	0.70	24%	1.67	pass
Z079	6.0941	25.137	12.26	2.97	6.3466	2.2895	0.70	23%	1.68	pass
Z080	6.1068	25.140	12.26	2.97	6.3481	2.2895	0.70	23%	1.68	pass
Z081	6.0883	25.142	12.26	2.97	6.3496	2.2910	0.70	24%	1.67	pass
Z082	6.1043	25.158	12.27	2.97	6.3504	2.2910	0.70	23%	1.68	pass
Z083	6.0921	25.125	12.26	2.96	6.3468	2.2895	0.70	24%	1.68	pass
Z084	6.0846	25.133	12.26	2.97	6.3497	2.2910	0.70	23%	1.67	pass
Z085	6.0969	25.147	12.26	2.97	6.3493	2.2910	0.70	24%	1.68	pass
Z086	6.1390	25.184	12.26	2.97	6.3497	2.2910	0.70	23%	1.69	pass
Z087	6.0842	25.128	12.26	2.97	6.3456	2.2895	0.70	23%	1.67	pass
Z088	6.0970	25.114	12.25	2.96	6.3453	2.2895	0.70	24%	1.68	pass
Z089	6.0965	25.138	12.26	2.97	6.3484	2.2895	0.70	23%	1.68	pass
Z090	6.0858	25.106	12.26	2.96	6.3465	2.2895	0.70	24%	1.68	pass
Z091	6.0866	25.135	12.25	2.96	6.3475	2.2895	0.70	24%	1.67	pass
Z092	6.1102	25.167	12.26	2.97	6.3447	2.2880	0.70	23%	1.68	pass
Z093	6.0899	25.137	12.26	2.97	6.3448	2.2880	0.70	23%	1.67	pass
Z094	6.1341	25.147	12.25	2.97	6.3459	2.2895	0.70	23%	1.69	pass
Z095	6.1043	25.144	12.27	2.97	6.3459	2.2895	0.70	23%	1.68	pass
Z096	6.1043	25.111	12.26	2.96	6.3474	2.2895	0.70	24%	1.68	pass
Z097	6.0950	25.128	12.25	2.96	6.3461	2.2895	0.70	24%	1.68	pass
Z098	6.1224	25.180	12.27	2.98	6.3451	2.2895	0.70	23%	1.68	pass
Z099	6.0865	25.114	12.27	2.97	6.3466	2.2895	0.70	23%	1.67	pass
Z100	6.1354	25.132	12.25	2.96	6.3492	2.2910	0.70	24%	1.70	pass

Comments
Average weight per overcoated particle from combined results of 2 independent measurements (W09081401 and W09081402).

	
Operator	Date
	
QC Supervisor	Date
	
QA Reviewer	Date

Data Report Form DRF-24B: Compact Matrix Density


Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls
Average weight per TRISO particle (g):	1.462E-03
Average weight per overcoated particle (g):	4.053E-03
Average TRISO particle volume (cm3):	4.450E-04

Acceptance criteria for matrix density: ≥ 1.45

Compact ID Number	Compact Weight (g)	Length (mm)	Av. Diameter (mm)	Compact Volume (cm3)	Charge Weight (g)	Particle Weight (g)	Particle Volume (cm3)	Packing Fraction	Matrix Density (g/cm3)	Accept? (pass or fail)
Z101	6.0922	25.100	12.26	2.96	6.3450	2.2895	0.70	24%	1.68	pass
Z102	6.0919	25.095	12.25	2.96	6.3484	2.2895	0.70	24%	1.68	pass
Z103	6.1294	25.114	12.27	2.97	6.3481	2.2895	0.70	23%	1.69	pass
Z104	6.1022	25.142	12.27	2.97	6.3465	2.2895	0.70	23%	1.68	pass
Z105	6.0773	25.138	12.28	2.97	6.3453	2.2895	0.70	23%	1.66	pass
Z106	6.1068	25.147	12.27	2.97	6.3486	2.2895	0.70	23%	1.68	pass
Z107	6.0866	25.135	12.26	2.97	6.3465	2.2895	0.70	23%	1.67	pass
Z108	6.1399	25.109	12.26	2.96	6.3477	2.2895	0.70	24%	1.70	pass
Z109	6.0896	25.123	12.26	2.97	6.3455	2.2895	0.70	23%	1.67	pass
Z110	6.0995	25.126	12.25	2.96	6.3489	2.2895	0.70	24%	1.68	pass
Z111	6.1015	25.151	12.27	2.97	6.3474	2.2895	0.70	23%	1.67	pass
Z112	6.1339	25.099	12.27	2.97	6.3462	2.2895	0.70	23%	1.69	pass
Z113	6.0856	25.123	12.26	2.97	6.3460	2.2895	0.70	23%	1.67	pass
Z114	6.0762	25.144	12.27	2.97	6.3457	2.2895	0.70	23%	1.66	pass
Z115	6.1022	25.167	12.27	2.97	6.3476	2.2895	0.70	23%	1.67	pass
Z116	6.0924	25.147	12.27	2.97	6.3470	2.2895	0.70	23%	1.67	pass
Z117	6.0856	25.142	12.27	2.97	6.3473	2.2895	0.70	23%	1.67	pass
Z118	6.0896	25.123	12.26	2.97	6.3462	2.2895	0.70	23%	1.67	pass
Z119	6.0741	25.099	12.27	2.97	6.3473	2.2895	0.70	23%	1.67	pass
Z120	6.0703	25.096	12.27	2.97	6.3470	2.2895	0.70	24%	1.67	pass
Z121	6.0950	25.143	12.26	2.97	6.3487	2.2895	0.70	23%	1.68	pass
Z122	6.1342	25.171	12.26	2.97	6.3485	2.2895	0.70	23%	1.69	pass
Z123	6.0978	25.129	12.26	2.97	6.3470	2.2895	0.70	23%	1.68	pass
Z124	6.1039	25.125	12.27	2.97	6.3479	2.2895	0.70	23%	1.68	pass
Z125	6.0853	25.133	12.27	2.97	6.3448	2.2880	0.70	23%	1.67	pass
Z126	6.1411	25.132	12.26	2.96	6.3457	2.2895	0.70	24%	1.70	pass
Z127	6.1158	25.137	12.27	2.97	6.3438	2.2880	0.70	23%	1.68	pass
Z128	6.0947	25.140	12.26	2.97	6.3442	2.2880	0.70	23%	1.68	pass
Z129	6.1264	25.143	12.27	2.97	6.3490	2.2895	0.70	23%	1.68	pass
Z130	6.1025	25.149	12.27	2.98	6.3452	2.2895	0.70	23%	1.67	pass
Z131	6.0870	25.109	12.27	2.97	6.3464	2.2895	0.70	23%	1.67	pass
Z132	6.1354	25.162	12.27	2.98	6.3448	2.2880	0.70	23%	1.69	pass
Z133	6.0952	25.111	12.28	2.97	6.3467	2.2895	0.70	23%	1.67	pass
Z134	6.0790	25.146	12.28	2.98	6.3486	2.2895	0.70	23%	1.66	pass
Z135	6.1198	25.128	12.26	2.97	6.3484	2.2895	0.70	23%	1.69	pass
Z136	6.0966	25.157	12.28	2.98	6.3477	2.2895	0.70	23%	1.67	pass
Z137	6.1086	25.149	12.28	2.98	6.3464	2.2895	0.70	23%	1.67	pass
Z138	6.0970	25.110	12.28	2.97	6.3444	2.2880	0.70	23%	1.67	pass
Z139	6.0918	25.101	12.28	2.97	6.3459	2.2895	0.70	23%	1.67	pass
Z140	6.1372	25.144	12.28	2.98	6.3510	2.2910	0.70	23%	1.69	pass
Z141	6.0982	25.125	12.28	2.98	6.3496	2.2910	0.70	23%	1.67	pass
Z142	6.0985	25.146	12.29	2.98	6.3457	2.2895	0.70	23%	1.67	pass
Z143	6.1088	25.201	12.28	2.99	6.3454	2.2895	0.70	23%	1.67	pass
Z144	6.0896	25.151	12.27	2.97	6.3446	2.2880	0.70	23%	1.67	pass
Z145	6.0878	25.161	12.26	2.97	6.3463	2.2895	0.70	23%	1.67	pass
Z146	6.0920	25.128	12.27	2.97	6.3439	2.2880	0.70	23%	1.67	pass
Z147	6.1164	25.100	12.28	2.97	6.3484	2.2895	0.70	23%	1.68	pass
Z148	6.1121	25.133	12.27	2.97	6.3470	2.2895	0.70	23%	1.68	pass
Z149	6.0877	25.132	12.27	2.97	6.3438	2.2880	0.70	23%	1.67	pass
Z150	6.1128	25.126	12.27	2.97	6.3499	2.2910	0.70	23%	1.68	pass

Comments


Average weight per overcoated particle from combined results of 2 independent measurements (W09081401 and W09081402).


Operator

9-14-09
Date


QC Supervisor

1-12-10
Date


QA Reviewer

2/03/10
Date

Data Report Form DRF-24B: Compact Matrix Density

Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Average weight per TRISO particle (g):	1.462E-03
Average weight per overcoated particle (g):	4.053E-03
Average TRISO particle volume (cm3):	4.450E-04

Acceptance criteria for matrix density:	≥ 1.45
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Compact ID Number	Compact Weight (g)	Length (mm)	Av. Diameter (mm)	Compact Volume (cm3)	Charge Weight (g)	Particle Weight (g)	Particle Volume (cm3)	Packing Fraction	Matrix Density (g/cm3)	Accept? (pass or fail)
Z151	6.0982	25.104	12.25	2.96	6.3449	2.2880	0.70	24%	1.68	pass
Z152	6.0894	25.107	12.28	2.97	6.3455	2.2895	0.70	23%	1.67	pass
Z153	6.1035	25.152	12.27	2.98	6.3478	2.2895	0.70	23%	1.67	pass
Z154	6.1087	25.156	12.28	2.98	6.3467	2.2895	0.70	23%	1.67	pass
Z155	6.0840	25.143	12.28	2.98	6.3450	2.2895	0.70	23%	1.66	pass
Z156	6.0941	25.125	12.27	2.97	6.3487	2.2895	0.70	23%	1.67	pass
Z157	6.0844	25.130	12.28	2.98	6.3491	2.2910	0.70	23%	1.66	pass
Z158	6.0799	25.101	12.27	2.97	6.3452	2.2895	0.70	23%	1.67	pass
Z159	6.1297	25.159	12.28	2.98	6.3460	2.2895	0.70	23%	1.68	pass
Z160	6.0878	25.130	12.26	2.97	6.3460	2.2895	0.70	23%	1.67	pass
Z161	6.1107	25.126	12.28	2.98	6.3490	2.2895	0.70	23%	1.68	pass
Z162	6.1015	25.125	12.28	2.97	6.3470	2.2895	0.70	23%	1.67	pass
Z163	6.0932	25.130	12.28	2.97	6.3462	2.2895	0.70	23%	1.67	pass
Z164	6.0992	25.123	12.28	2.98	6.3461	2.2895	0.70	23%	1.67	pass
Z165	6.0912	25.083	12.27	2.96	6.3469	2.2895	0.70	24%	1.68	pass
Z166	6.1253	25.124	12.28	2.98	6.3447	2.2880	0.70	23%	1.68	pass
Z167	6.0908	25.132	12.25	2.96	6.3487	2.2895	0.70	24%	1.68	pass
Z168	6.1011	25.124	12.26	2.96	6.3489	2.2895	0.70	24%	1.68	pass
Z169	6.0785	25.140	12.27	2.97	6.3463	2.2895	0.70	23%	1.66	pass
Z170	6.1455	25.168	12.28	2.98	6.3486	2.2895	0.70	23%	1.69	pass
Z171	6.1104	25.158	12.28	2.98	6.3490	2.2895	0.70	23%	1.68	pass
Z172	6.0897	25.111	12.27	2.97	6.3458	2.2895	0.70	23%	1.67	pass
Z173	6.0898	25.112	12.28	2.97	6.3488	2.2895	0.70	23%	1.67	pass
Z174	6.0965	25.144	12.27	2.97	6.3470	2.2895	0.70	23%	1.67	pass
Z175	6.1379	25.143	12.26	2.97	6.3464	2.2895	0.70	23%	1.70	pass
Z176	6.0979	25.115	12.27	2.97	6.3479	2.2895	0.70	23%	1.68	pass
Z177	6.1120	25.107	12.27	2.97	6.3475	2.2895	0.70	23%	1.68	pass
Z178	6.1436	25.137	12.27	2.97	6.3465	2.2895	0.70	23%	1.69	pass
Z179	6.1361	25.135	12.27	2.97	6.3459	2.2895	0.70	23%	1.69	pass
Z180	6.1018	25.153	12.27	2.98	6.3487	2.2895	0.70	23%	1.67	pass
Z181	6.1057	25.146	12.27	2.97	6.3466	2.2895	0.70	23%	1.68	pass
Z182	6.0987	25.120	12.27	2.97	6.3499	2.2910	0.70	23%	1.68	pass
Z183	6.0887	25.152	12.28	2.98	6.3483	2.2895	0.70	23%	1.67	pass
Z184	6.0845	25.159	12.28	2.98	6.3462	2.2895	0.70	23%	1.66	pass
Z185	6.0766	25.105	12.28	2.97	6.3471	2.2895	0.70	23%	1.67	pass
Z186	6.0890	25.110	12.28	2.97	6.3474	2.2895	0.70	23%	1.67	pass
Z187	6.1087	25.159	12.27	2.98	6.3448	2.2880	0.70	23%	1.68	pass
Z188	6.1028	25.133	12.27	2.97	6.3470	2.2895	0.70	23%	1.68	pass
Z189	6.0976	25.124	12.27	2.97	6.3476	2.2895	0.70	23%	1.67	pass
Z190	6.0808	25.102	12.28	2.97	6.3477	2.2895	0.70	23%	1.67	pass
Z191	6.0926	25.134	12.27	2.97	6.3468	2.2895	0.70	23%	1.67	pass
Z192	6.0909	25.143	12.27	2.97	6.3463	2.2895	0.70	23%	1.67	pass
Z193	6.0909	25.115	12.27	2.97	6.3445	2.2880	0.70	23%	1.67	pass
Z194	6.0972	25.107	12.28	2.97	6.3485	2.2895	0.70	23%	1.67	pass
Z195	6.0915	25.107	12.28	2.97	6.3484	2.2895	0.70	23%	1.67	pass
Z196	6.0895	25.132	12.28	2.98	6.3465	2.2895	0.70	23%	1.67	pass
Z197	6.0985	25.142	12.28	2.98	6.3461	2.2895	0.70	23%	1.67	pass
Z198	6.0855	25.140	12.28	2.98	6.3468	2.2895	0.70	23%	1.67	pass
Z199	6.1384	25.143	12.26	2.97	6.3470	2.2895	0.70	23%	1.69	pass
Z200	6.0657	25.101	12.27	2.97	6.3479	2.2895	0.70	23%	1.66	pass

Comments
Average weight per overcoated particle from combined results of 2 independent measurements (W09081401 and W09081402).

	9-14-09
Operator	Date

	1-12-10
QC Supervisor	Date

	2/03/10
QA Reviewer	Date

Data Report Form DRF-24B: Compact Matrix Density

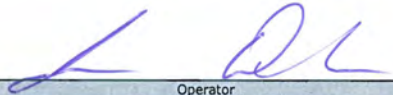
Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\unc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Average weight per TRISO particle (g):	1.462E-03
Average weight per overcoated particle (g):	4.053E-03
Average TRISO particle volume (cm3):	4.450E-04

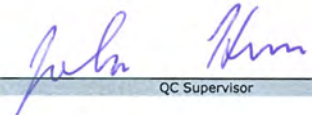
Acceptance criteria for matrix density:	≥ 1.45
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Compact ID Number	Compact Weight (g)	Length (mm)	Av. Diameter (mm)	Compact Volume (cm3)	Charge Weight (g)	Particle Weight (g)	Particle Volume (cm3)	Packing Fraction	Matrix Density (g/cm3)	Accept? (pass or fail)
Z201	6.1076	25.151	12.28	2.98	6.3493	2.2910	0.70	23%	1.67	pass
Z202	6.1375	25.142	12.25	2.96	6.3470	2.2895	0.70	24%	1.70	pass
Z203	6.0864	25.120	12.27	2.97	6.3462	2.2895	0.70	23%	1.67	pass
Z204										
Z205										
Z206										
Z207										
Z208										
Z209										
Z210										
Z211										
Z212										
Z213										
Z214										
Z215										
Z216										
Z217										
Z218										
Z219										
Z220										
Z221										
Z222										
Z223										
Z224										
Z225										
Z226										
Z227										
Z228										
Z229										
Z230										
Z231										
Z232										
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Z246										
Z247										
Z248										
Z249										
Z250										

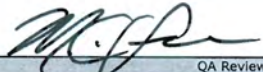
Comments
Average weight per overcoated particle from combined results of 2 independent measurements (W09081401 and W09081402).


Operator

9-14-09
Date


QC Supervisor

1-12-10
Date


QA Reviewer

2/03/10
Date

Data Report Form DRF-24C: Compact Tracking

Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\vmc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Compact Z Number	Compact G Number	Compact Z Number	Compact G Number	Compact Z Number	Compact G Number	Compact Z Number	Compact G Number	Compact Z Number	Compact G Number
Z001	G021	Z051	G036	Z101	G123	Z151	G029	Z201	G203
Z002	G106	Z052	G012	Z102	G049	Z152	G068	Z202	G090
Z003	G197	Z053	G041	Z103	G219	Z153	G103	Z203	G152
Z004	G087	Z054	G171	Z104	G144	Z154	G018	Z204	
Z005	G130	Z055	G098	Z105	G066	Z155	G158	Z205	
Z006	G060	Z056	G156	Z106	G010	Z156	G023	Z206	
Z007	G047	Z057	G124	Z107	G004	Z157	G183	Z207	
Z008	G147	Z058	G177	Z108	G099	Z158	G067	Z208	
Z009	G101	Z059	G008	Z109	G120	Z159	G218	Z209	
Z010	G071	Z060	G007	Z110	G039	Z160	G014	Z210	
Z011	G035	Z061	G185	Z111	G210	Z161	G198	Z211	
Z012	G057	Z062	G059	Z112	G086	Z162	G109	Z212	
Z013	G195	Z063	G170	Z113	G161	Z163	G013	Z213	
Z014	G180	Z064	G209	Z114	G182	Z164	G044	Z214	
Z015	G114	Z065	G062	Z115	G063	Z165	G116	Z215	
Z016	G078	Z066	G046	Z116	G192	Z166	G215	Z216	
Z017	G164	Z067	G135	Z117	G174	Z167	G058	Z217	
Z018	G206	Z068	G070	Z118	G006	Z168	G073	Z218	
Z019	G107	Z069	G125	Z119	G166	Z169	G151	Z219	
Z020	G037	Z070	G202	Z120	G163	Z170	G081	Z220	
Z021	G172	Z071	G162	Z121	G054	Z171	G015	Z221	
Z022	G118	Z072	G194	Z122	G095	Z172	G119	Z222	
Z023	G132	Z073	G167	Z123	G019	Z173	G181	Z223	
Z024	G139	Z074	G153	Z124	G205	Z174	G102	Z224	
Z025	G154	Z075	G121	Z125	G175	Z175	G083	Z225	
Z026	G138	Z076	G025	Z126	G094	Z176	G079	Z226	
Z027	G042	Z077	G022	Z127	G216	Z177	G053	Z227	
Z028	G085	Z078	G187	Z128	G100	Z178	G082	Z228	
Z029	G084	Z079	G040	Z129	G220	Z179	G088	Z229	
Z030	G140	Z080	G011	Z130	G104	Z180	G136	Z230	
Z031	G089	Z081	G045	Z131	G052	Z181	G105	Z231	
Z032	G129	Z082	G212	Z132	G097	Z182	G137	Z232	
Z033	G117	Z083	G145	Z133	G026	Z183	G112	Z233	
Z034	G111	Z084	G188	Z134	G190	Z184	G150	Z234	
Z035	G093	Z085	G024	Z135	G043	Z185	G159	Z235	
Z036	G003	Z086	G096	Z136	G142	Z186	G173	Z236	
Z037	G009	Z087	G176	Z137	G207	Z187	G196	Z237	
Z038	G108	Z088	G056	Z138	G191	Z188	G027	Z238	
Z039	G160	Z089	G148	Z139	G143	Z189	G113	Z239	
Z040	G128	Z090	G069	Z140	G213	Z190	G165	Z240	
Z041	G122	Z091	G005	Z141	G189	Z191	G134	Z241	
Z042	G065	Z092	G032	Z142	G208	Z192	G002	Z242	
Z043	G020	Z093	G141	Z143	G064	Z193	G131	Z243	
Z044	G133	Z094	G091	Z144	G074	Z194	G146	Z244	
Z045	G217	Z095	G211	Z145	G178	Z195	G115	Z245	
Z046	G157	Z096	G126	Z146	G030	Z196	G186	Z246	
Z047	G193	Z097	G075	Z147	G199	Z197	G016	Z247	
Z048	G201	Z098	G214	Z148	G200	Z198	G184	Z248	
Z049	G155	Z099	G204	Z149	G033	Z199	G080	Z249	
Z050	G017	Z100	G092	Z150	G031	Z200	G149	Z250	

Comments



Operator

3-10-10

Date

Data Report Form DRF-24D: Compact Charge Weight

Procedure:	AGR-CHAR-DAM-24 Rev. 6a
Operator:	Dunbar, Barker, Hunn, West
Compact lot ID:	LEU11-OP2-Z
Compact Lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\CompactDimensions\LEU11-OP2_DRF24R6a.xls

Analytical balance calibration due date: 10/29/09

Target compact charge weight (g):	6.3470
Allowable tolerance in compact charge weight (g):	0.0040
Average weight per overcoated particle (g):	4.053E-03
Approximate number of particles per compact:	1566
Average uranium loading per particle (g):	6.386E-04
Approximate uranium loading per compact (g):	1.000

Compact G Number	Charge Weight (g)
G001	6.3478
G002	6.3463
G003	6.3475
G004	6.3465
G005	6.3475
G006	6.3462
G007	6.3467
G008	6.3475
G009	6.3472
G010	6.3486
G011	6.3481
G012	6.3460
G013	6.3462
G014	6.3460
G015	6.3490
G016	6.3461
G017	6.3444
G018	6.3467
G019	6.3470
G020	6.3468
G021	6.3462
G022	6.3484
G023	6.3487
G024	6.3493
G025	6.3489
G026	6.3467
G027	6.3470
G028	6.3483
G029	6.3449
G030	6.3439
G031	6.3499
G032	6.3447
G033	6.3438
G034	6.3490
G035	6.3470
G036	6.3470
G037	6.3488
G038	6.3496
G039	6.3489
G040	6.3466
G041	6.3488
G042	6.3466
G043	6.3484
G044	6.3461
G045	6.3496
G046	6.3476
G047	6.3470
G048	6.3478
G049	6.3484
G050	6.3482

Compact G Number	Charge Weight (g)
G051	6.3454
G052	6.3464
G053	6.3475
G054	6.3487
G055	6.3449
G056	6.3453
G057	6.3453
G058	6.3487
G059	6.3482
G060	6.3474
G061	6.3487
G062	6.3449
G063	6.3476
G064	6.3454
G065	6.3499
G066	6.3453
G067	6.3452
G068	6.3455
G069	6.3465
G070	6.3466
G071	6.3471
G072	6.3464
G073	6.3489
G074	6.3446
G075	6.3461
G076	6.3458
G077	6.3492
G078	6.3460
G079	6.3479
G080	6.3470
G081	6.3486
G082	6.3465
G083	6.3464
G084	6.3477
G085	6.3509
G086	6.3462
G087	6.3495
G088	6.3459
G089	6.3441
G090	6.3470
G091	6.3459
G092	6.3492
G093	6.3461
G094	6.3457
G095	6.3485
G096	6.3497
G097	6.3448
G098	6.3480
G099	6.3477
G100	6.3442

Compact G Number	Charge Weight (g)
G101	6.3455
G102	6.3470
G103	6.3478
G104	6.3452
G105	6.3466
G106	6.3458
G107	6.3488
G108	6.3483
G109	6.3470
G110	6.3454
G111	6.3490
G112	6.3483
G113	6.3476
G114	6.3460
G115	6.3484
G116	6.3469
G117	6.3471
G118	6.3471
G119	6.3458
G120	6.3455
G121	6.3448
G122	6.3450
G123	6.3450
G124	6.3474
G125	6.3453
G126	6.3474
G127	6.3445
G128	6.3464
G129	6.3466
G130	6.3491
G131	6.3445
G132	6.3487
G133	6.3466
G134	6.3468
G135	6.3458
G136	6.3487
G137	6.3499
G138	6.3464
G139	6.3472
G140	6.3458
G141	6.3448
G142	6.3477
G143	6.3459
G144	6.3465
G145	6.3468
G146	6.3485
G147	6.3483
G148	6.3484
G149	6.3479
G150	6.3462

Compact G Number	Charge Weight (g)
G151	6.3463
G152	6.3462
G153	6.3494
G154	6.3479
G155	6.3488
G156	6.3479
G157	6.3449
G158	6.3450
G159	6.3471
G160	6.3462
G161	6.3460
G162	6.3462
G163	6.3470
G164	6.3474
G165	6.3477
G166	6.3473
G167	6.3475
G168	6.3438
G169	6.3470
G170	6.3464
G171	6.3491
G172	6.3451
G173	6.3474
G174	6.3473
G175	6.3448
G176	6.3456
G177	6.3448
G178	6.3463
G179	6.3479
G180	6.3446
G181	6.3488
G182	6.3457
G183	6.3491
G184	6.3493
G185	6.3474
G186	6.3465
G187	6.3472
G188	6.3497
G189	6.3496
G190	6.3486
G191	6.3444
G192	6.3470
G193	6.3458
G194	6.3463
G195	6.3453
G196	6.3448
G197	6.3448
G198	6.3490
G199	6.3484
G200	6.3470

Compact G Number	Charge Weight (g)
G201	6.3477
G202	6.3490
G203	6.3493
G204	6.3466
G205	6.3479
G206	6.3474
G207	6.3464
G208	6.3457
G209	6.3498
G210	6.3474
G211	6.3459
G212	6.3504
G213	6.3510
G214	6.3451
G215	6.3447
G216	6.3438
G217	6.3464
G218	6.3460
G219	6.3481
G220	6.3490
G221	
G222	
G223	
G224	
G225	
G226	
G227	
G228	
G229	
G230	
G231	
G232	
G233	
G234	
G235	
G236	
G237	
G238	
G239	
G240	
G241	
G242	
G243	
G244	
G245	
G246	
G247	
G248	
G249	
G250	

Comments

Average weight per overcoated particle from combined results of 2 independent measurements (W09081401 and W09081402).

Dunbar Barker
Operator

8-28-09
Date

Data Report Form DRF-25: Fuel Compact Mean Uranium Loading

Procedure:	AGR-CHAR-DAM-25 Rev. 2
Operator:	Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\UraniumLoading\LEU11-OP2-Z_DRF25R2.xls

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Compact ID number:	Z050	Z113	Z110	Z160	Z135	Z151
First Leach						
Sample tube ID number:	U09101501	U09101502	U09101503	U09101504	U09101505	U09101506
Radiochemical laboratory analysis number:	2303-001	2303-002	2303-003	2303-004	2303-005	2303-006
Weight U in leach (g):	0.997	0.997	0.984	0.986	0.992	1.003
Uncertainty in weight U in leach (g):	0.007	0.007	0.007	0.007	0.007	0.007
Second Leach						
Sample tube ID number:	U09101601	U09101602	U09101603	U09101604	U09101605	U09101606
Radiochemical laboratory analysis number:	2303-007	2303-008	2308-009	2308-010	2308-011	2308-012
Weight U in leach (g):	1.51E-04	3.48E-04	4.59E-04	1.10E-03	2.16E-04	5.23E-04
Uncertainty in weight U in leach (g):	1.51E-05	3.48E-05	4.59E-05	1.10E-04	2.16E-05	5.23E-05
Total Measured U						
Weight U in compact (g):	0.997	0.998	0.985	0.987	0.992	1.004
Uncertainty in weight U in compact (g):	0.007	0.007	0.007	0.007	0.007	0.007
Mean uranium loading (gU/compact):				0.994		
Standard deviation in mean uranium loading (gU/compact):				0.007		

Comments	
<p>Leach 1 was analyzed by Davies-Gray titration method. Leach 2 was analyzed by ICP-MS, due to low U concentration. wt. % U235 enrichment: sample 1 = 9.63; sample 2 = 9.62; sample 3 = 9.62; sample 4 = 9.62; sample 5 = 9.62; sample 6 = 9.62. Davies gray: initial known U recovery = 100.48%; final known U recovery = 100.69%; blind titration U recovery = 100.92% Uncertainty in Davies-Gray (0.7%) based on average of measured % recovery data for this analysis. Checked against official results of analyses for RMAL2303 by FCM on 11/19/2009</p>	

Fred C. Montgomery
Operator

3/10/2010
Date

Data Report Form DRF-25: Fuel Compact Mean Uranium Loading

Procedure:	AGR-CHAR-DAM-25 Rev. 2
Operator:	Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Filename:	\\mc-agr\AGR\UraniumLoading\LEU11-OP2-Z_Reanalysis_DRF25R2.xls

	Sample 1	Sample 2	Sample 3	Sample 4	Sample 5	Sample 6
Compact ID number:	Z050	Z113	Z110	Z160	Z135	Z151
First Leach						
Sample tube ID number:	U09101501	U09101502	U09101503	U09101504	U09101505	U09101506
Radiochemical laboratory analysis number:	2382-001	2382-002	2382-003	2382-004	2382-005	2382-006
Weight U in leach (g):	0.994	0.995	0.984	0.983	0.992	0.998
Uncertainty in weight U in leach (g):	0.007	0.007	0.007	0.007	0.007	0.007
Second Leach						
Sample tube ID number:	U09101601	U09101602	U09101603	U09101604	U09101605	U09101606
Radiochemical laboratory analysis number:	2303-007	2303-008	2308-009	2308-010	2308-011	2308-012
Weight U in leach (g):	1.51E-04	3.48E-04	4.59E-04	1.10E-03	2.16E-04	5.23E-04
Uncertainty in weight U in leach (g):	1.51E-05	3.48E-05	4.59E-05	1.10E-04	2.16E-05	5.23E-05
Total Measured U						
Weight U in compact (g):	0.995	0.995	0.984	0.984	0.992	0.998
Uncertainty in weight U in compact (g):	0.007	0.007	0.007	0.007	0.007	0.007
Mean uranium loading (gU/compact):	0.991					
Standard deviation in mean uranium loading (gU/compact):	0.006					

Comments

Analysis of leach solutions was repeated because of higher than normal uncertainty in first analysis.
 Leach 1 was analyzed by Davies-Gray titration method. D.G. data from 2nd analysis. Leach 2 was analyzed by ICP-MS, due to low U concentration.
 wt. % U235 from initial Davies-Gray titration samples: sample 1 = 9.63; sample 2 = 9.62; sample 3 = 9.62; sample 4 = 9.62; sample 5 = 9.62; sample 6 = 9.62.
 Davies gray: initial known U recovery = 100.49%; final known U recovery = 100.66%; blind titration U recovery = 100.84%
 Uncertainty in Davies-Gray (0.7%) based on average of measured % recovery data for this analysis.
 Checked against official results of analyses for RMAL2382 by FCM on 11/19/2009

Fred C. Montgomery
 Operator

3-10-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	043, 202, 168, 112, 033
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09091601	L09091801	
Number of compacts:		5		
Total volume of leach solution (ml):		126.0	130.0	
Radiochemical laboratory analysis number:		2250-001	2250-006	
Measured uranium concentration (µg/ml):		7.10E-03	1.81E-03	
Uncertainty in uranium concentration (µg/ml):		7.10E-04	1.81E-04	
Weight uranium leached (g):		8.95E-07	2.35E-07	1.13E-06
Uncertainty in weight uranium leached (g):		8.96E-08	2.36E-08	9.26E-08
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 5.19	< 5.36	<10.55
	Weight of impurity in blank (µg):	< 6.18	< 5.19	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	5.19	5.36	10.55
Cr	Measured concentration of impurity in sample (µg/ml):	1.33E-02	7.73E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.68	1.00	2.68
	Weight of impurity in blank (µg):	< 0.30	1.14	
	Minimum corrected weight of impurity in sample (µg):	1.38	0.00	1.38
	Maximum corrected weight of impurity in sample (µg):	1.68	0.00	1.68
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.24	< 0.25	< 0.49
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.24	0.25	0.49
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.21	< 0.41
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.21	0.41
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 1.01	< 1.04	< 2.05
	Weight of impurity in blank (µg):	< 1.20	< 1.01	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	1.01	1.04	2.05
Ca	Measured concentration of impurity in sample (µg/ml):	9.02E-01	8.85E-01	Ca
	Uncorrected weight of impurity in sample (µg):	113.65	115.05	228.70
	Weight of impurity in blank (µg):	71.85	30.37	
	Minimum corrected weight of impurity in sample (µg):	41.80	84.68	126.49
	Maximum corrected weight of impurity in sample (µg):	41.80	84.68	126.49
Al	Measured concentration of impurity in sample (µg/ml):	9.64E-01	2.52E-01	Al
	Uncorrected weight of impurity in sample (µg):	121.46	32.76	154.22
	Weight of impurity in blank (µg):	12.18	35.53	
	Minimum corrected weight of impurity in sample (µg):	109.28	0.00	109.28
	Maximum corrected weight of impurity in sample (µg):	109.28	0.00	109.28
Ti	Measured concentration of impurity in sample (µg/ml):	6.47E-02	4.79E-02	Ti
	Uncorrected weight of impurity in sample (µg):	8.15	6.23	14.38
	Weight of impurity in blank (µg):	< 1.20	6.35	
	Minimum corrected weight of impurity in sample (µg):	6.95	0.00	6.95
	Maximum corrected weight of impurity in sample (µg):	8.15	0.00	8.15
V	Measured concentration of impurity in sample (µg/ml):	2.98E-01	5.29E-02	V
	Uncorrected weight of impurity in sample (µg):	37.55	6.88	44.43
	Weight of impurity in blank (µg):	< 0.30	8.28	
	Minimum corrected weight of impurity in sample (µg):	37.25	0.00	37.25
	Maximum corrected weight of impurity in sample (µg):	37.55	0.00	37.55

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	145, 027, 105, 119, 167
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09091602	L09091802	
Number of compacts:		5		
Total volume of leach solution (ml):		132.0	128.0	
Radiochemical laboratory analysis number:		2250-002	2250-007	
Measured uranium concentration (µg/ml):		7.37E-03	1.89E-03	
Uncertainty in uranium concentration (µg/ml):		7.37E-04	1.89E-04	
Weight uranium leached (g):		9.73E-07	2.42E-07	1.21E-06
Uncertainty in weight uranium leached (g):		9.74E-08	2.42E-08	1.00E-07
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 5.44	< 5.27	<10.71
	Weight of impurity in blank (µg):	< 6.18	< 5.19	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	5.44	5.27	10.71
Cr	Measured concentration of impurity in sample (µg/ml):	9.93E-03	8.60E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.31	1.10	2.41
	Weight of impurity in blank (µg):	< 0.30	1.14	
	Minimum corrected weight of impurity in sample (µg):	1.01	0.00	1.01
	Maximum corrected weight of impurity in sample (µg):	1.31	0.00	1.31
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.25	< 0.24	< 0.50
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.25	0.24	0.50
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.21	< 0.21	< 0.42
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.21	0.21	0.42
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 1.06	< 1.02	< 2.08
	Weight of impurity in blank (µg):	< 1.20	< 1.01	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	1.06	1.02	2.08
Ca	Measured concentration of impurity in sample (µg/ml):	7.13E-01	6.88E-01	Ca
	Uncorrected weight of impurity in sample (µg):	94.12	88.06	182.18
	Weight of impurity in blank (µg):	71.85	30.37	
	Minimum corrected weight of impurity in sample (µg):	22.27	57.70	79.96
	Maximum corrected weight of impurity in sample (µg):	22.27	57.70	79.96
Al	Measured concentration of impurity in sample (µg/ml):	9.14E-01	2.48E-01	Al
	Uncorrected weight of impurity in sample (µg):	120.65	31.74	152.39
	Weight of impurity in blank (µg):	12.18	35.53	
	Minimum corrected weight of impurity in sample (µg):	108.47	0.00	108.47
	Maximum corrected weight of impurity in sample (µg):	108.47	0.00	108.47
Ti	Measured concentration of impurity in sample (µg/ml):	5.84E-02	4.35E-02	Ti
	Uncorrected weight of impurity in sample (µg):	7.71	5.57	13.28
	Weight of impurity in blank (µg):	< 1.20	6.35	
	Minimum corrected weight of impurity in sample (µg):	6.51	0.00	6.51
	Maximum corrected weight of impurity in sample (µg):	7.71	0.00	7.71
V	Measured concentration of impurity in sample (µg/ml):	2.88E-01	5.46E-02	V
	Uncorrected weight of impurity in sample (µg):	38.02	6.99	45.00
	Weight of impurity in blank (µg):	< 0.30	8.28	
	Minimum corrected weight of impurity in sample (µg):	37.72	0.00	37.72
	Maximum corrected weight of impurity in sample (µg):	38.02	0.00	38.02

Comments

Data checked against the official results of analyses for RMA12250 by FCM on 11/10/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	137, 064, 175, 009, 195
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09091603	L09091803	
Number of compacts:	5		
Total volume of leach solution (ml):	127.0	119.0	
Radiochemical laboratory analysis number:	2250-003	2250-008	
Measured uranium concentration (µg/ml):	7.09E-03	1.94E-03	
Uncertainty in uranium concentration (µg/ml):	7.09E-04	1.94E-04	
Weight uranium leached (g):	9.00E-07	2.31E-07	1.13E-06
Uncertainty in weight uranium leached (g):	9.02E-08	2.31E-08	9.31E-08
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 5.23	< 4.90
	Weight of impurity in blank (µg):	< 6.18	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	5.23	4.90
	Measured concentration of impurity in sample (µg/ml):	7.56E-03	1.17E-02
	Uncorrected weight of impurity in sample (µg):	0.96	1.39
	Weight of impurity in blank (µg):	< 0.30	1.14
Mn	Minimum corrected weight of impurity in sample (µg):	0.66	0.25
	Maximum corrected weight of impurity in sample (µg):	0.96	0.25
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	2.01E-03
	Uncorrected weight of impurity in sample (µg):	< 0.24	0.24
Co	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.24	0.24
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.21	< 0.19
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.21	0.19
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 1.02	< 0.95
	Weight of impurity in blank (µg):	< 1.20	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	1.02	0.95
	Measured concentration of impurity in sample (µg/ml):	5.52E-01	8.38E-01
	Uncorrected weight of impurity in sample (µg):	70.10	99.72
	Weight of impurity in blank (µg):	71.85	30.37
Ti	Minimum corrected weight of impurity in sample (µg):	0.00	69.36
	Maximum corrected weight of impurity in sample (µg):	0.00	69.36
	Measured concentration of impurity in sample (µg/ml):	8.86E-01	2.34E-01
	Uncorrected weight of impurity in sample (µg):	112.52	27.85
V	Weight of impurity in blank (µg):	12.18	35.53
	Minimum corrected weight of impurity in sample (µg):	100.34	0.00
	Maximum corrected weight of impurity in sample (µg):	100.34	0.00
	Measured concentration of impurity in sample (µg/ml):	5.28E-02	4.58E-02
	Uncorrected weight of impurity in sample (µg):	6.71	5.45
	Weight of impurity in blank (µg):	< 1.20	6.35
	Minimum corrected weight of impurity in sample (µg):	5.51	0.00
	Maximum corrected weight of impurity in sample (µg):	6.71	0.00
	Measured concentration of impurity in sample (µg/ml):	2.93E-01	5.98E-02
	Uncorrected weight of impurity in sample (µg):	37.21	7.12
	Weight of impurity in blank (µg):	< 0.30	8.28
	Minimum corrected weight of impurity in sample (µg):	36.91	0.00
	Maximum corrected weight of impurity in sample (µg):	37.21	0.00

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	148, 149, 035, 048, 038
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09091604	L09091804	
Number of compacts:		5		
Total volume of leach solution (ml):		118.0	128.0	
Radiochemical laboratory analysis number:		2250-004	2250-009	
Measured uranium concentration (µg/ml):		<2.00E-04	7.59E-03	
Uncertainty in uranium concentration (µg/ml):			7.59E-04	
Weight uranium leached (g):		<2.36E-08	9.72E-07	<9.95E-07
Uncertainty in weight uranium leached (g):			9.73E-08	
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:			0.0	
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 4.86	< 5.27	<10.14
	Weight of impurity in blank (µg):	< 6.18	< 5.19	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.86	5.27	10.14
Cr	Measured concentration of impurity in sample (µg/ml):	< 2.00E-03	1.28E-02	Cr
	Uncorrected weight of impurity in sample (µg):	< 0.24	1.64	< 1.87
	Weight of impurity in blank (µg):	< 0.30	1.14	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.50	0.50
	Maximum corrected weight of impurity in sample (µg):	0.24	0.50	0.73
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24	< 0.47
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24	0.47
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.21	< 0.40
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.21	0.40
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.94	< 1.02	< 1.97
	Weight of impurity in blank (µg):	< 1.20	< 1.01	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.94	1.02	1.97
Ca	Measured concentration of impurity in sample (µg/ml):	6.36E-01	7.93E-01	Ca
	Uncorrected weight of impurity in sample (µg):	75.05	101.50	176.55
	Weight of impurity in blank (µg):	71.85	30.37	
	Minimum corrected weight of impurity in sample (µg):	3.20	71.14	74.34
	Maximum corrected weight of impurity in sample (µg):	3.20	71.14	74.34
Al	Measured concentration of impurity in sample (µg/ml):	4.64E-02	1.01E+00	Al
	Uncorrected weight of impurity in sample (µg):	5.48	129.28	134.76
	Weight of impurity in blank (µg):	12.18	35.53	
	Minimum corrected weight of impurity in sample (µg):	0.00	93.75	93.75
	Maximum corrected weight of impurity in sample (µg):	0.00	93.75	93.75
Ti	Measured concentration of impurity in sample (µg/ml):	1.07E-02	5.80E-02	Ti
	Uncorrected weight of impurity in sample (µg):	1.26	7.42	8.69
	Weight of impurity in blank (µg):	< 1.20	6.35	
	Minimum corrected weight of impurity in sample (µg):	0.06	1.07	1.14
	Maximum corrected weight of impurity in sample (µg):	1.26	1.07	2.34
V	Measured concentration of impurity in sample (µg/ml):	< 2.00E-03	3.33E-01	V
	Uncorrected weight of impurity in sample (µg):	< 0.24	42.62	<42.86
	Weight of impurity in blank (µg):	< 0.30	8.28	
	Minimum corrected weight of impurity in sample (µg):	0.00	34.35	34.35
	Maximum corrected weight of impurity in sample (µg):	0.24	34.35	34.58

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09091605	L09091805	
Number of compacts:		None		
Total volume of leach solution (ml):		150.0	126.0	
Radiochemical laboratory analysis number:		2250-005	2250-010	
Measured uranium concentration (µg/ml):		<2.00E-04	2.08E-03	
Uncertainty in uranium concentration (µg/ml):			2.08E-04	
Weight uranium leached (g):		<3.00E-08	2.62E-07	<2.92E-07
Uncertainty in weight uranium leached (g):			2.62E-08	
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:			0.0	
Fe	Measured concentration (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg):	< 6.18	< 5.19	<11.37
Cr	Measured concentration (µg/ml):	< 2.00E-03	9.06E-03	Cr
	Total weight of leached impurity (µg):	< 0.30	1.14	< 1.44
Mn	Measured concentration (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg):	< 0.29	< 0.24	< 0.53
Co	Measured concentration (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg):	< 0.24	< 0.20	< 0.45
Ni	Measured concentration (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg):	< 1.20	< 1.01	< 2.21
Ca	Measured concentration (µg/ml):	4.79E-01	2.41E-01	Ca
	Total weight of leached impurity (µg):	71.85	30.37	102.22
Al	Measured concentration (µg/ml):	8.12E-02	2.82E-01	Al
	Total weight of leached impurity (µg):	12.18	35.53	47.71
Ti	Measured concentration (µg/ml):	< 8.00E-03	5.04E-02	Ti
	Total weight of leached impurity (µg):	< 1.20	6.35	< 7.55
V	Measured concentration (µg/ml):	< 2.00E-03	6.57E-02	V
	Total weight of leached impurity (µg):	< 0.30	8.28	< 8.58

Comments

Data checked against the official results of analyses for RMA2250 by FCM on 11/10/2009.

Fred C. Montgomery
Operator

1-27-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	043, 202, 168, 112, 033
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09102001	B09102201	
Number of compacts:	5		
Total volume of leach solution (ml):	50.0	53.0	
Radiochemical laboratory analysis number:	2335-001	2335-006	
Measured uranium concentration (µg/ml):	5.91E-02	1.66E-03	
Uncertainty in uranium concentration (µg/ml):	5.91E-03	1.66E-04	
Weight uranium leached (g):	2.96E-06	8.80E-08	3.04E-06
Uncertainty in weight uranium leached (g):	2.98E-07	8.86E-09	2.98E-07
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 2.06	< 2.18
	Weight of impurity in blank (µg):	< 2.14	< 2.18
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	2.06	2.18
	Measured concentration of impurity in sample (µg/ml):	7.36E-03	< 2.00E-03
	Uncorrected weight of impurity in sample (µg):	0.37	< 0.11
	Weight of impurity in blank (µg):	< 0.10	< 0.11
Mn	Minimum corrected weight of impurity in sample (µg):	0.26	0.00
	Maximum corrected weight of impurity in sample (µg):	0.37	0.11
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10
Co	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.09
	Weight of impurity in blank (µg):	< 0.08	< 0.09
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.09
Ca	Measured concentration of impurity in sample (µg/ml):	9.73E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	0.49	< 0.42
	Weight of impurity in blank (µg):	< 0.42	< 0.42
	Minimum corrected weight of impurity in sample (µg):	0.07	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.49	0.42
	Measured concentration of impurity in sample (µg/ml):	1.76E+00	< 1.00E-01
	Uncorrected weight of impurity in sample (µg):	88.00	< 5.30
	Weight of impurity in blank (µg):	7.70	< 5.30
Ti	Minimum corrected weight of impurity in sample (µg):	80.30	0.00
	Maximum corrected weight of impurity in sample (µg):	80.30	5.30
	Measured concentration of impurity in sample (µg/ml):	1.71E+00	7.75E-02
	Uncorrected weight of impurity in sample (µg):	85.50	4.11
V	Weight of impurity in blank (µg):	3.03	2.08
	Minimum corrected weight of impurity in sample (µg):	82.47	2.02
	Maximum corrected weight of impurity in sample (µg):	82.47	2.02
	Measured concentration of impurity in sample (µg/ml):	7.64E-02	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	3.82	< 0.42
	Weight of impurity in blank (µg):	< 0.42	< 0.42
	Minimum corrected weight of impurity in sample (µg):	3.40	0.00
	Maximum corrected weight of impurity in sample (µg):	3.82	0.42
	Measured concentration of impurity in sample (µg/ml):	6.68E-01	9.89E-03
	Uncorrected weight of impurity in sample (µg):	33.40	0.52
	Weight of impurity in blank (µg):	< 0.10	< 0.11
	Minimum corrected weight of impurity in sample (µg):	33.30	0.42
	Maximum corrected weight of impurity in sample (µg):	33.40	0.52
	Measured concentration of impurity in sample (µg/ml):		
	Uncorrected weight of impurity in sample (µg):		
	Weight of impurity in blank (µg):		
	Minimum corrected weight of impurity in sample (µg):		
	Maximum corrected weight of impurity in sample (µg):		

Comments

Data checked against the official results of analyses for RMAL2335 by FCM on 11/23/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	145, 027, 105, 119, 167
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B09102002	B09102202	
Number of compacts:		5		
Total volume of leach solution (ml):		50.0	52.5	
Radiochemical laboratory analysis number:		2335-002	2335-007	
Measured uranium concentration (µg/ml):		6.33E-02	1.66E-03	
Uncertainty in uranium concentration (µg/ml):		6.33E-03	1.66E-04	
Weight uranium leached (g):		3.17E-06	8.72E-08	3.25E-06
Uncertainty in weight uranium leached (g):		3.19E-07	8.78E-09	3.19E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	4.45E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	2.23	< 2.16	< 4.39
	Weight of impurity in blank (µg):	< 2.14	< 2.18	
	Minimum corrected weight of impurity in sample (µg):	0.08	0.00	0.08
Cr	Maximum corrected weight of impurity in sample (µg):	2.23	2.16	4.39
	Measured concentration of impurity in sample (µg/ml):	7.92E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.40	< 0.11	< 0.50
	Weight of impurity in blank (µg):	< 0.10	< 0.11	
Mn	Minimum corrected weight of impurity in sample (µg):	0.29	0.00	0.29
	Maximum corrected weight of impurity in sample (µg):	0.40	0.11	0.50
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10	< 0.20
Co	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.09	0.17
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
Ni	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.09	< 0.17
	Weight of impurity in blank (µg):	< 0.08	< 0.09	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.09	0.17
Ca	Measured concentration of impurity in sample (µg/ml):	1.06E-02	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.53	< 0.42	< 0.95
	Weight of impurity in blank (µg):	< 0.42	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	0.11	0.00	0.11
Al	Maximum corrected weight of impurity in sample (µg):	0.53	0.42	0.95
	Measured concentration of impurity in sample (µg/ml):	1.75E+00	2.96E-01	Ca
	Uncorrected weight of impurity in sample (µg):	87.50	15.54	103.04
	Weight of impurity in blank (µg):	7.70	< 5.30	
Ti	Minimum corrected weight of impurity in sample (µg):	79.80	10.24	90.04
	Maximum corrected weight of impurity in sample (µg):	79.80	15.54	95.34
	Measured concentration of impurity in sample (µg/ml):	1.81E+00	7.14E-02	Al
	Uncorrected weight of impurity in sample (µg):	90.50	3.75	94.25
V	Weight of impurity in blank (µg):	3.03	2.08	
	Minimum corrected weight of impurity in sample (µg):	87.47	1.67	89.14
	Maximum corrected weight of impurity in sample (µg):	87.47	1.67	89.14
	Measured concentration of impurity in sample (µg/ml):	9.22E-02	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	4.61	< 0.42	< 5.03
	Weight of impurity in blank (µg):	< 0.42	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	4.19	0.00	4.19
	Maximum corrected weight of impurity in sample (µg):	4.61	0.42	5.03
	Measured concentration of impurity in sample (µg/ml):	7.26E-01	8.49E-03	V
	Uncorrected weight of impurity in sample (µg):	36.30	0.45	36.75
	Weight of impurity in blank (µg):	< 0.10	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	36.20	0.34	36.54
	Maximum corrected weight of impurity in sample (µg):	36.30	0.45	36.75

Comments

Data checked against the official results of analyses for RMAL2335 by FCM on 11/23/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	137, 064, 175, 009, 195
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B09102003	B09102203	
Number of compacts:		5		
Total volume of leach solution (ml):		48.5	51.8	
Radiochemical laboratory analysis number:		2335-003	2335-008	
Measured uranium concentration (µg/ml):		6.61E-02	1.17E-03	
Uncertainty in uranium concentration (µg/ml):		6.61E-03	1.17E-04	
Weight uranium leached (g):		3.21E-06	6.06E-08	3.27E-06
Uncertainty in weight uranium leached (g):		3.23E-07	6.11E-09	3.24E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	8.13E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	3.94	< 2.13	< 6.08
	Weight of impurity in blank (µg):	< 2.14	< 2.18	
	Minimum corrected weight of impurity in sample (µg):	1.80	0.00	1.80
	Maximum corrected weight of impurity in sample (µg):	3.94	2.13	6.08
Cr	Measured concentration of impurity in sample (µg/ml):	5.94E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.29	< 0.10	< 0.39
	Weight of impurity in blank (µg):	< 0.10	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	0.18	0.00	0.18
	Maximum corrected weight of impurity in sample (µg):	0.29	0.10	0.39
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.09	< 0.10	< 0.19
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.09	0.10	0.19
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08	< 0.16
	Weight of impurity in blank (µg):	< 0.08	< 0.09	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08	0.16
Ni	Measured concentration of impurity in sample (µg/ml):	9.08E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.44	< 0.41	< 0.85
	Weight of impurity in blank (µg):	< 0.42	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	0.02	0.00	0.02
	Maximum corrected weight of impurity in sample (µg):	0.44	0.41	0.85
Ca	Measured concentration of impurity in sample (µg/ml):	1.80E+00	< 1.00E-01	Ca
	Uncorrected weight of impurity in sample (µg):	87.30	< 5.18	< 92.48
	Weight of impurity in blank (µg):	7.70	< 5.30	
	Minimum corrected weight of impurity in sample (µg):	79.60	0.00	79.60
	Maximum corrected weight of impurity in sample (µg):	79.60	5.18	84.78
Al	Measured concentration of impurity in sample (µg/ml):	1.95E+00	6.25E-02	Al
	Uncorrected weight of impurity in sample (µg):	94.58	3.24	97.81
	Weight of impurity in blank (µg):	3.03	2.08	
	Minimum corrected weight of impurity in sample (µg):	91.55	1.15	92.70
	Maximum corrected weight of impurity in sample (µg):	91.55	1.15	92.70
Ti	Measured concentration of impurity in sample (µg/ml):	1.16E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	5.63	< 0.41	< 6.04
	Weight of impurity in blank (µg):	< 0.42	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	5.21	0.00	5.21
	Maximum corrected weight of impurity in sample (µg):	5.63	0.41	6.04
V	Measured concentration of impurity in sample (µg/ml):	7.64E-01	6.32E-03	V
	Uncorrected weight of impurity in sample (µg):	37.05	0.33	37.38
	Weight of impurity in blank (µg):	< 0.10	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	36.95	0.22	37.17
	Maximum corrected weight of impurity in sample (µg):	37.05	0.33	37.38

Comments

Data checked against the official results of analyses for RMA2335 by FCM on 11/23/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26B: Measurement of SiC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	148, 149, 035, 048, 038
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B09102004	B09102204	
Number of compacts:		5		
Total volume of leach solution (ml):		51.0	54.0	
Radiochemical laboratory analysis number:		2335-004	2335-009	
Measured uranium concentration (µg/ml):		6.32E-02	1.37E-03	
Uncertainty in uranium concentration (µg/ml):		6.32E-03	1.37E-04	
Weight uranium leached (g):		3.22E-06	7.40E-08	3.30E-06
Uncertainty in weight uranium leached (g):		3.25E-07	7.45E-09	3.25E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 2.10	< 2.22	< 4.33
	Weight of impurity in blank (µg):	< 2.14	< 2.18	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	2.10	2.22	4.33
Cr	Measured concentration of impurity in sample (µg/ml):	5.60E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.29	< 0.11	< 0.39
	Weight of impurity in blank (µg):	< 0.10	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	0.18	0.00	0.18
	Maximum corrected weight of impurity in sample (µg):	0.29	0.11	0.39
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10	< 0.20
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10	0.20
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.09	< 0.17
	Weight of impurity in blank (µg):	< 0.08	< 0.09	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.09	0.17
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.41	< 0.43	< 0.84
	Weight of impurity in blank (µg):	< 0.42	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.41	0.43	0.84
Ca	Measured concentration of impurity in sample (µg/ml):	1.55E+00	2.79E-01	Ca
	Uncorrected weight of impurity in sample (µg):	79.05	15.07	94.12
	Weight of impurity in blank (µg):	7.70	< 5.30	
	Minimum corrected weight of impurity in sample (µg):	71.35	9.77	81.12
	Maximum corrected weight of impurity in sample (µg):	71.35	15.07	86.42
Al	Measured concentration of impurity in sample (µg/ml):	1.74E+00	5.49E-02	Al
	Uncorrected weight of impurity in sample (µg):	88.74	2.96	91.70
	Weight of impurity in blank (µg):	3.03	2.08	
	Minimum corrected weight of impurity in sample (µg):	85.71	0.88	86.60
	Maximum corrected weight of impurity in sample (µg):	85.71	0.88	86.60
Ti	Measured concentration of impurity in sample (µg/ml):	1.08E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	5.51	< 0.43	< 5.94
	Weight of impurity in blank (µg):	< 0.42	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	5.09	0.00	5.09
	Maximum corrected weight of impurity in sample (µg):	5.51	0.43	5.94
V	Measured concentration of impurity in sample (µg/ml):	7.27E-01	5.54E-03	V
	Uncorrected weight of impurity in sample (µg):	37.08	0.30	37.38
	Weight of impurity in blank (µg):	< 0.10	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	36.97	0.19	37.17
	Maximum corrected weight of impurity in sample (µg):	37.08	0.30	37.38

Comments

Data checked against the official results of analyses for RMAL2335 by FCM on 11/23/2009.

Fred C. Montgomery

Operator

1-27-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Burn-Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_01.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09102005	B09102205	
Number of compacts:	None		
Total volume of leach solution (ml):	52.0	53.0	
Radiochemical laboratory analysis number:	2335-005	2335-010	
Measured uranium concentration (µg/ml):	<2.00E-04	<2.00E-04	
Uncertainty in uranium concentration (µg/ml):			
Weight uranium leached (g):	<1.04E-08	<1.06E-08	<2.10E-08
Uncertainty in weight uranium leached (g):			
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:			
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 2.14	< 2.18	< 4.33
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.10	< 0.11	< 0.21
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.10	< 0.10	< 0.20
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.08	< 0.09	< 0.17
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 0.42	< 0.42	< 0.84
Ca	Measured concentration (µg/ml): 1.48E-01	< 1.00E-01	Ca
	Total weight of leached impurity (µg): 7.70	< 5.30	<13.00
Al	Measured concentration (µg/ml): 5.82E-02	3.93E-02	Al
	Total weight of leached impurity (µg): 3.03	2.08	5.11
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 0.42	< 0.42	< 0.84
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.10	< 0.11	< 0.21

Comments

Data checked against the official results of analyses for RMA2335 by FCM on 11/23/2009.

Fred C. Montgomery
Operator

1-27-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	200, 037, 153, 157, 012
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.386E-04
Uncertainty in mean average weight uranium per particle (g):	7.0E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09092001	L09092201	
Number of compacts:	5		
Total volume of leach solution (ml):	128.0	126.0	
Radiochemical laboratory analysis number:	2250-016	2250-021	
Measured uranium concentration (µg/ml):	7.36E-03	2.04E-03	
Uncertainty in uranium concentration (µg/ml):	7.36E-04	2.04E-04	
Weight uranium leached (g):	9.42E-07	2.57E-07	1.20E-06
Uncertainty in weight uranium leached (g):	9.43E-08	2.57E-08	9.78E-08
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 5.27	< 5.19
	Weight of impurity in blank (µg):	9.50	< 5.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	0.00	5.19
	Measured concentration of impurity in sample (µg/ml):	1.62E-02	6.74E-03
	Uncorrected weight of impurity in sample (µg):	2.07	0.85
	Weight of impurity in blank (µg):	< 0.31	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	1.77	0.60
	Maximum corrected weight of impurity in sample (µg):	2.07	0.85
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.24	< 0.24
Co	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.24	0.24
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.21	< 0.20
	Weight of impurity in blank (µg):	< 0.25	< 0.21
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.21	0.20
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 1.02	< 1.01
	Weight of impurity in blank (µg):	< 1.22	< 1.02
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	1.02	1.01
	Measured concentration of impurity in sample (µg/ml):	1.31E+00	4.43E-01
	Uncorrected weight of impurity in sample (µg):	167.68	55.82
	Weight of impurity in blank (µg):	24.94	32.77
Ti	Minimum corrected weight of impurity in sample (µg):	142.74	23.05
	Maximum corrected weight of impurity in sample (µg):	142.74	23.05
	Measured concentration of impurity in sample (µg/ml):	1.02E+00	2.37E-01
	Uncorrected weight of impurity in sample (µg):	130.56	29.86
V	Weight of impurity in blank (µg):	11.69	2.93
	Minimum corrected weight of impurity in sample (µg):	118.87	26.93
	Maximum corrected weight of impurity in sample (µg):	118.87	26.93
	Measured concentration of impurity in sample (µg/ml):	8.34E-02	4.06E-02
	Uncorrected weight of impurity in sample (µg):	10.68	5.12
	Weight of impurity in blank (µg):	< 1.22	< 1.02
	Minimum corrected weight of impurity in sample (µg):	9.45	4.10
	Maximum corrected weight of impurity in sample (µg):	10.68	5.12
	Measured concentration of impurity in sample (µg/ml):	3.29E-01	5.04E-02
	Uncorrected weight of impurity in sample (µg):	42.11	6.35
	Weight of impurity in blank (µg):	< 0.31	< 0.25
	Minimum corrected weight of impurity in sample (µg):	41.81	6.10
	Maximum corrected weight of impurity in sample (µg):	42.11	6.35

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	109, 011, 124, 070, 056
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09092002	L09092202	
Number of compacts:	5		
Total volume of leach solution (ml):	113.0	122.0	
Radiochemical laboratory analysis number:	2250-017	2250-022	
Measured uranium concentration (µg/ml):	8.95E-03	3.22E-03	
Uncertainty in uranium concentration (µg/ml):	8.95E-04	3.22E-04	
Weight uranium leached (g):	1.01E-06	3.93E-07	1.40E-06
Uncertainty in weight uranium leached (g):	1.01E-07	3.93E-08	1.09E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.66	< 5.03
	Weight of impurity in blank (µg):	9.50	< 5.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	0.00	5.03
	Measured concentration of impurity in sample (µg/ml):	1.79E-02	8.24E-03
	Uncorrected weight of impurity in sample (µg):	2.02	1.01
	Weight of impurity in blank (µg):	< 0.31	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	1.72	0.75
	Maximum corrected weight of impurity in sample (µg):	2.02	1.01
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.22	< 0.23
Co	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.22	0.23
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.18	< 0.20
	Weight of impurity in blank (µg):	< 0.25	< 0.21
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.18	0.20
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.90	< 0.98
	Weight of impurity in blank (µg):	< 1.22	< 1.02
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.90	0.98
	Measured concentration of impurity in sample (µg/ml):	7.85E-01	2.55E-01
	Uncorrected weight of impurity in sample (µg):	88.71	31.11
	Weight of impurity in blank (µg):	24.94	32.77
Ti	Minimum corrected weight of impurity in sample (µg):	63.77	0.00
	Maximum corrected weight of impurity in sample (µg):	63.77	0.00
	Measured concentration of impurity in sample (µg/ml):	1.04E+00	2.35E-01
	Uncorrected weight of impurity in sample (µg):	117.52	28.67
V	Weight of impurity in blank (µg):	11.69	2.93
	Minimum corrected weight of impurity in sample (µg):	105.83	25.74
	Maximum corrected weight of impurity in sample (µg):	105.83	25.74
	Measured concentration of impurity in sample (µg/ml):	7.15E-02	5.03E-02
	Uncorrected weight of impurity in sample (µg):	8.08	6.14
	Weight of impurity in blank (µg):	< 1.22	< 1.02
	Minimum corrected weight of impurity in sample (µg):	6.86	5.12
	Maximum corrected weight of impurity in sample (µg):	8.08	6.14
	Measured concentration of impurity in sample (µg/ml):	3.58E-01	6.18E-02
	Uncorrected weight of impurity in sample (µg):	40.45	7.54
	Weight of impurity in blank (µg):	< 0.31	< 0.25
	Minimum corrected weight of impurity in sample (µg):	40.15	7.29
	Maximum corrected weight of impurity in sample (µg):	40.45	7.54

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	158, 031, 095, 041, 154
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09092003	L09092203	
Number of compacts:	5		
Total volume of leach solution (ml):	129.0	127.0	
Radiochemical laboratory analysis number:	2250-018	2250-023	
Measured uranium concentration (µg/ml):	7.46E-03	2.18E-03	
Uncertainty in uranium concentration (µg/ml):	7.46E-04	2.18E-04	
Weight uranium leached (g):	9.62E-07	2.77E-07	1.24E-06
Uncertainty in weight uranium leached (g):	9.64E-08	2.77E-08	1.00E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 5.31	< 5.23
	Weight of impurity in blank (µg):	9.50	< 5.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.00	5.23
Cr	Measured concentration of impurity in sample (µg/ml):	1.43E-02	7.15E-03
	Uncorrected weight of impurity in sample (µg):	1.84	0.91
	Weight of impurity in blank (µg):	< 0.31	< 0.25
	Minimum corrected weight of impurity in sample (µg):	1.54	0.65
	Maximum corrected weight of impurity in sample (µg):	1.84	0.91
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.25	< 0.24
	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.25	0.24
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.21	< 0.21
	Weight of impurity in blank (µg):	< 0.25	< 0.21
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.21	0.21
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 1.03	< 1.02
	Weight of impurity in blank (µg):	< 1.22	< 1.02
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	1.03	1.02
Ca	Measured concentration of impurity in sample (µg/ml):	7.68E-01	5.71E-01
	Uncorrected weight of impurity in sample (µg):	99.07	72.52
	Weight of impurity in blank (µg):	24.94	32.77
	Minimum corrected weight of impurity in sample (µg):	74.13	39.75
	Maximum corrected weight of impurity in sample (µg):	74.13	39.75
Al	Measured concentration of impurity in sample (µg/ml):	1.03E+00	2.66E-01
	Uncorrected weight of impurity in sample (µg):	132.87	33.78
	Weight of impurity in blank (µg):	11.69	2.93
	Minimum corrected weight of impurity in sample (µg):	121.18	30.85
	Maximum corrected weight of impurity in sample (µg):	121.18	30.85
Ti	Measured concentration of impurity in sample (µg/ml):	8.90E-02	4.18E-02
	Uncorrected weight of impurity in sample (µg):	11.48	5.31
	Weight of impurity in blank (µg):	< 1.22	< 1.02
	Minimum corrected weight of impurity in sample (µg):	10.26	4.29
	Maximum corrected weight of impurity in sample (µg):	11.48	5.31
V	Measured concentration of impurity in sample (µg/ml):	3.30E-01	4.93E-02
	Uncorrected weight of impurity in sample (µg):	42.57	6.26
	Weight of impurity in blank (µg):	< 0.31	< 0.25
	Minimum corrected weight of impurity in sample (µg):	42.26	6.01
	Maximum corrected weight of impurity in sample (µg):	42.57	6.26

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	004, 166, 040, 067, 142
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09092004	L09092204	
Number of compacts:		5		
Total volume of leach solution (ml):		117.0	127.0	
Radiochemical laboratory analysis number:		2250-019	2250-024	
Measured uranium concentration (µg/ml):		9.10E-03	2.60E-03	
Uncertainty in uranium concentration (µg/ml):		9.10E-04	2.60E-04	
Weight uranium leached (g):		1.06E-06	3.30E-07	1.39E-06
Uncertainty in weight uranium leached (g):		1.07E-07	3.31E-08	1.12E-07
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 4.82	< 5.23	<10.05
	Weight of impurity in blank (µg):	9.50	< 5.23	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.00	5.23	5.23
Cr	Measured concentration of impurity in sample (µg/ml):	1.32E-02	9.90E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.54	1.26	2.80
	Weight of impurity in blank (µg):	< 0.31	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	1.24	1.00	2.24
	Maximum corrected weight of impurity in sample (µg):	1.54	1.26	2.80
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.22	< 0.24	< 0.47
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.22	0.24	0.47
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.21	< 0.40
	Weight of impurity in blank (µg):	< 0.25	< 0.21	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.21	0.40
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.94	< 1.02	< 1.95
	Weight of impurity in blank (µg):	< 1.22	< 1.02	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.94	1.02	1.95
Ca	Measured concentration of impurity in sample (µg/ml):	7.50E-01	5.74E-01	Ca
	Uncorrected weight of impurity in sample (µg):	87.75	72.90	160.65
	Weight of impurity in blank (µg):	24.94	32.77	
	Minimum corrected weight of impurity in sample (µg):	62.81	40.13	102.94
	Maximum corrected weight of impurity in sample (µg):	87.75	72.90	160.65
Al	Measured concentration of impurity in sample (µg/ml):	1.12E+00	3.20E-01	Al
	Uncorrected weight of impurity in sample (µg):	131.04	40.64	171.68
	Weight of impurity in blank (µg):	11.69	2.93	
	Minimum corrected weight of impurity in sample (µg):	119.35	37.71	157.06
	Maximum corrected weight of impurity in sample (µg):	131.04	40.64	171.68
Ti	Measured concentration of impurity in sample (µg/ml):	3.58E-02	3.84E-02	Ti
	Uncorrected weight of impurity in sample (µg):	4.19	4.88	9.07
	Weight of impurity in blank (µg):	< 1.22	< 1.02	
	Minimum corrected weight of impurity in sample (µg):	2.96	3.86	6.83
	Maximum corrected weight of impurity in sample (µg):	4.19	4.88	9.07
V	Measured concentration of impurity in sample (µg/ml):	3.52E-01	8.19E-02	V
	Uncorrected weight of impurity in sample (µg):	41.18	10.40	51.59
	Weight of impurity in blank (µg):	< 0.31	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	40.88	10.15	51.03
	Maximum corrected weight of impurity in sample (µg):	41.18	10.40	51.59

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09092005	L09092205	
Number of compacts:	None		
Total volume of leach solution (ml):	153.0	127.0	
Radiochemical laboratory analysis number:	2250-020	2250-025	
Measured uranium concentration (µg/ml):	<2.00E-04	7.56E-04	
Uncertainty in uranium concentration (µg/ml):		7.56E-05	
Weight uranium leached (g):	<3.06E-08	9.60E-08	<1.27E-07
Uncertainty in weight uranium leached (g):		9.61E-09	
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	
Fe	Measured concentration (µg/ml): 6.21E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): 9.50	< 5.23	<14.73
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.31	< 0.25	< 0.56
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.29	< 0.24	< 0.53
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.25	< 0.21	< 0.45
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 1.22	< 1.02	< 2.24
Ca	Measured concentration (µg/ml): 1.63E-01	2.58E-01	Ca
	Total weight of leached impurity (µg): 24.94	32.77	57.71
Al	Measured concentration (µg/ml): 7.64E-02	2.31E-02	Al
	Total weight of leached impurity (µg): 11.69	2.93	14.62
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 1.22	< 1.02	< 2.24
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.31	< 0.25	< 0.56

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	200, 037, 153, 157, 012
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B09102801	B09103001	
Number of compacts:		5		
Total volume of leach solution (ml):		51.0	49.0	
Radiochemical laboratory analysis number:		2345-001	2345-006	
Measured uranium concentration (µg/ml):		6.32E-02	2.26E-03	
Uncertainty in uranium concentration (µg/ml):		6.32E-03	2.26E-04	
Weight uranium leached (g):		3.22E-06	1.11E-07	3.33E-06
Uncertainty in weight uranium leached (g):		3.25E-07	1.12E-08	3.25E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	5.34E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	2.72	< 2.02	< 4.74
	Weight of impurity in blank (µg):	< 2.20	< 2.16	
	Minimum corrected weight of impurity in sample (µg):	0.52	0.00	0.52
	Maximum corrected weight of impurity in sample (µg):	2.72	2.02	4.74
Cr	Measured concentration of impurity in sample (µg/ml):	7.90E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.40	< 0.10	< 0.50
	Weight of impurity in blank (µg):	< 0.11	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	0.30	0.00	0.30
	Maximum corrected weight of impurity in sample (µg):	0.40	0.10	0.50
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.09	< 0.19
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.09	0.19
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08	< 0.16
	Weight of impurity in blank (µg):	< 0.09	< 0.09	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08	0.16
Ni	Measured concentration of impurity in sample (µg/ml):	9.45E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.48	< 0.39	< 0.87
	Weight of impurity in blank (µg):	< 0.43	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	0.05	0.00	0.05
	Maximum corrected weight of impurity in sample (µg):	0.48	0.39	0.87
Ca	Measured concentration of impurity in sample (µg/ml):	1.86E+00	2.30E-01	Ca
	Uncorrected weight of impurity in sample (µg):	94.86	11.27	106.13
	Weight of impurity in blank (µg):	18.14	13.91	
	Minimum corrected weight of impurity in sample (µg):	76.72	0.00	76.72
	Maximum corrected weight of impurity in sample (µg):	76.72	0.00	76.72
Al	Measured concentration of impurity in sample (µg/ml):	1.97E+00	3.44E-02	Al
	Uncorrected weight of impurity in sample (µg):	100.47	1.69	102.16
	Weight of impurity in blank (µg):	1.64	1.16	
	Minimum corrected weight of impurity in sample (µg):	98.83	0.53	99.35
	Maximum corrected weight of impurity in sample (µg):	98.83	0.53	99.35
Ti	Measured concentration of impurity in sample (µg/ml):	1.05E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	5.36	< 0.39	< 5.75
	Weight of impurity in blank (µg):	< 0.43	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	4.93	0.00	4.93
	Maximum corrected weight of impurity in sample (µg):	5.36	0.39	5.75
V	Measured concentration of impurity in sample (µg/ml):	7.19E-01	4.49E-03	V
	Uncorrected weight of impurity in sample (µg):	36.67	0.22	36.89
	Weight of impurity in blank (µg):	< 0.11	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	36.56	0.12	36.68
	Maximum corrected weight of impurity in sample (µg):	36.67	0.22	36.89

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	109, 011, 124, 070, 056
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09102802	B09103002	
Number of compacts:	5		
Total volume of leach solution (ml):	49.0	50.2	
Radiochemical laboratory analysis number:	2345-002	23455-007	
Measured uranium concentration (µg/ml):	6.45E-02	6.72E-04	
Uncertainty in uranium concentration (µg/ml):	6.45E-03	6.72E-05	
Weight uranium leached (g):	3.16E-06	3.37E-08	3.19E-06
Uncertainty in weight uranium leached (g):	3.19E-07	3.40E-09	3.19E-07
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 2.02	< 2.07
	Weight of impurity in blank (µg):	< 2.20	< 2.16
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	2.02	2.07
Cr	Measured concentration of impurity in sample (µg/ml):	7.06E-03	< 2.00E-03
	Uncorrected weight of impurity in sample (µg):	0.35	< 0.10
	Weight of impurity in blank (µg):	< 0.11	< 0.11
	Minimum corrected weight of impurity in sample (µg):	0.24	0.00
	Maximum corrected weight of impurity in sample (µg):	0.35	0.10
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.09	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.09	0.10
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08
	Weight of impurity in blank (µg):	< 0.09	< 0.09
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08
Ni	Measured concentration of impurity in sample (µg/ml):	8.81E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	0.43	< 0.40
	Weight of impurity in blank (µg):	< 0.43	< 0.42
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.43	0.40
Ca	Measured concentration of impurity in sample (µg/ml):	2.00E+00	1.49E-01
	Uncorrected weight of impurity in sample (µg):	98.00	7.48
	Weight of impurity in blank (µg):	18.14	13.91
	Minimum corrected weight of impurity in sample (µg):	79.86	0.00
	Maximum corrected weight of impurity in sample (µg):	79.86	0.00
Al	Measured concentration of impurity in sample (µg/ml):	1.76E+00	2.96E-02
	Uncorrected weight of impurity in sample (µg):	86.24	1.49
	Weight of impurity in blank (µg):	1.64	1.16
	Minimum corrected weight of impurity in sample (µg):	84.60	0.33
	Maximum corrected weight of impurity in sample (µg):	84.60	0.33
Ti	Measured concentration of impurity in sample (µg/ml):	1.18E-01	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	5.78	< 0.40
	Weight of impurity in blank (µg):	< 0.43	< 0.42
	Minimum corrected weight of impurity in sample (µg):	5.35	0.00
	Maximum corrected weight of impurity in sample (µg):	5.78	0.40
V	Measured concentration of impurity in sample (µg/ml):	7.29E-01	2.07E-03
	Uncorrected weight of impurity in sample (µg):	35.72	0.10
	Weight of impurity in blank (µg):	< 0.11	< 0.11
	Minimum corrected weight of impurity in sample (µg):	35.61	0.00
	Maximum corrected weight of impurity in sample (µg):	35.72	0.10

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery

Operator

3-1-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	158, 031, 095, 041, 154
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B09102803	B09103003	
Number of compacts:		5		
Total volume of leach solution (ml):		52.0	53.0	
Radiochemical laboratory analysis number:		2345-003	2345-008	
Measured uranium concentration (µg/ml):		6.02E-02	3.48E-04	
Uncertainty in uranium concentration (µg/ml):		6.02E-03	3.48E-05	
Weight uranium leached (g):		3.13E-06	1.84E-08	3.15E-06
Uncertainty in weight uranium leached (g):		3.15E-07	1.86E-09	3.15E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	4.85E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	2.52	< 2.18	< 4.71
	Weight of impurity in blank (µg):	< 2.20	< 2.16	
	Minimum corrected weight of impurity in sample (µg):	0.32	0.00	0.32
	Maximum corrected weight of impurity in sample (µg):	2.52	2.18	4.71
Cr	Measured concentration of impurity in sample (µg/ml):	5.91E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.31	< 0.11	< 0.41
	Weight of impurity in blank (µg):	< 0.11	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	0.20	0.00	0.20
	Maximum corrected weight of impurity in sample (µg):	0.31	0.11	0.41
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10	< 0.20
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10	0.20
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.09	< 0.17
	Weight of impurity in blank (µg):	< 0.09	< 0.09	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.09	0.17
Ni	Measured concentration of impurity in sample (µg/ml):	8.19E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.43	< 0.42	< 0.85
	Weight of impurity in blank (µg):	< 0.43	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.43	0.42	0.85
Ca	Measured concentration of impurity in sample (µg/ml):	1.77E+00	2.18E-01	Ca
	Uncorrected weight of impurity in sample (µg):	92.04	11.55	103.59
	Weight of impurity in blank (µg):	18.14	13.91	
	Minimum corrected weight of impurity in sample (µg):	73.90	0.00	73.90
	Maximum corrected weight of impurity in sample (µg):	73.90	0.00	73.90
Al	Measured concentration of impurity in sample (µg/ml):	1.66E+00	6.30E-02	Al
	Uncorrected weight of impurity in sample (µg):	86.32	3.34	89.66
	Weight of impurity in blank (µg):	1.64	1.16	
	Minimum corrected weight of impurity in sample (µg):	84.68	2.18	86.86
	Maximum corrected weight of impurity in sample (µg):	84.68	2.18	86.86
Ti	Measured concentration of impurity in sample (µg/ml):	7.03E-02	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	3.66	< 0.42	< 4.08
	Weight of impurity in blank (µg):	< 0.43	< 0.42	
	Minimum corrected weight of impurity in sample (µg):	3.23	0.00	3.23
	Maximum corrected weight of impurity in sample (µg):	3.66	0.42	4.08
V	Measured concentration of impurity in sample (µg/ml):	6.46E-01	6.92E-03	V
	Uncorrected weight of impurity in sample (µg):	33.59	0.37	33.96
	Weight of impurity in blank (µg):	< 0.11	< 0.11	
	Minimum corrected weight of impurity in sample (µg):	33.49	0.26	33.75
	Maximum corrected weight of impurity in sample (µg):	33.59	0.37	33.96

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery

Operator

3-1-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	004, 166, 040, 067, 142
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09102804	B09103004	
Number of compacts:	5		
Total volume of leach solution (ml):	50.0	51.5	
Radiochemical laboratory analysis number:	2345-004	2345-009	
Measured uranium concentration (µg/ml):	6.85E-02	1.69E-03	
Uncertainty in uranium concentration (µg/ml):	6.85E-03	1.69E-04	
Weight uranium leached (g):	3.43E-06	8.70E-08	3.51E-06
Uncertainty in weight uranium leached (g):	3.45E-07	8.77E-09	3.45E-07
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 2.06	< 2.12
	Weight of impurity in blank (µg):	< 2.20	< 2.16
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	2.06	2.12
Cr	Measured concentration of impurity in sample (µg/ml):	5.37E-03	< 2.00E-03
	Uncorrected weight of impurity in sample (µg):	0.27	< 0.10
	Weight of impurity in blank (µg):	< 0.11	< 0.11
	Minimum corrected weight of impurity in sample (µg):	0.16	0.00
	Maximum corrected weight of impurity in sample (µg):	0.27	0.10
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08
	Weight of impurity in blank (µg):	< 0.09	< 0.09
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.40	< 0.41
	Weight of impurity in blank (µg):	< 0.43	< 0.42
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.40	0.41
Ca	Measured concentration of impurity in sample (µg/ml):	1.88E+00	3.86E-01
	Uncorrected weight of impurity in sample (µg):	94.00	19.88
	Weight of impurity in blank (µg):	18.14	13.91
	Minimum corrected weight of impurity in sample (µg):	75.86	5.97
	Maximum corrected weight of impurity in sample (µg):	75.86	5.97
Al	Measured concentration of impurity in sample (µg/ml):	1.82E+00	3.62E-02
	Uncorrected weight of impurity in sample (µg):	91.00	1.86
	Weight of impurity in blank (µg):	1.64	1.16
	Minimum corrected weight of impurity in sample (µg):	89.36	0.70
	Maximum corrected weight of impurity in sample (µg):	89.36	0.70
Ti	Measured concentration of impurity in sample (µg/ml):	1.75E-01	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	8.75	< 0.41
	Weight of impurity in blank (µg):	< 0.43	< 0.42
	Minimum corrected weight of impurity in sample (µg):	8.32	0.00
	Maximum corrected weight of impurity in sample (µg):	8.75	0.41
V	Measured concentration of impurity in sample (µg/ml):	7.63E-01	< 2.00E-03
	Uncorrected weight of impurity in sample (µg):	38.15	< 0.10
	Weight of impurity in blank (µg):	< 0.11	< 0.11
	Minimum corrected weight of impurity in sample (µg):	38.04	0.00
	Maximum corrected weight of impurity in sample (µg):	38.15	0.10

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Burn-Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_02.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09102805	B09103005	
Number of compacts:	None		
Total volume of leach solution (ml):	53.5	52.5	
Radiochemical laboratory analysis number:	2345-005	2345-010	
Measured uranium concentration (µg/ml):	2.32E-04	2.72E-04	
Uncertainty in uranium concentration (µg/ml):	2.32E-05	2.72E-05	
Weight uranium leached (g):	1.24E-08	1.43E-08	2.67E-08
Uncertainty in weight uranium leached (g):	1.25E-09	1.44E-09	1.91E-09
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:	0.0	0.0	0.0
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 2.20	< 2.16	< 4.37
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.11	< 0.11	< 0.21
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.10	< 0.10	< 0.20
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.09	< 0.09	< 0.17
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 0.43	< 0.42	< 0.85
Ca	Measured concentration (µg/ml): 3.39E-01	2.65E-01	Ca
	Total weight of leached impurity (µg): 18.14	13.91	32.05
Al	Measured concentration (µg/ml): 3.07E-02	2.21E-02	Al
	Total weight of leached impurity (µg): 1.64	1.16	2.80
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 0.43	< 0.42	< 0.85
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.11	< 0.11	< 0.21

Comments

Data checked against the official results of analyses for RMAL2250 by FCM on 11/10/2009.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	069, 087, 046, 081, 194
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09120101	L09120401	
Number of compacts:		5		
Total volume of leach solution (ml):		121.0	127.0	
Radiochemical laboratory analysis number:		2449-001	2449-006	
Measured uranium concentration (µg/ml):		1.00E-02	2.85E-03	
Uncertainty in uranium concentration (µg/ml):		1.00E-03	2.85E-04	
Weight uranium leached (g):		1.21E-06	3.62E-07	1.57E-06
Uncertainty in weight uranium leached (g):		1.21E-07	3.62E-08	1.26E-07
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 4.99	< 5.23	<10.22
	Weight of impurity in blank (µg):	< 6.14	< 5.07	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.99	5.23	10.22
Cr	Measured concentration of impurity in sample (µg/ml):	9.42E-03	4.34E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.14	0.55	1.69
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	0.84	0.31	1.15
	Maximum corrected weight of impurity in sample (µg):	1.14	0.55	1.69
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24	< 0.47
	Weight of impurity in blank (µg):	< 0.28	< 0.23	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24	0.47
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.21	< 0.40
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.21	0.40
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.97	< 1.02	< 1.98
	Weight of impurity in blank (µg):	< 1.19	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.97	1.02	1.98
Ca	Measured concentration of impurity in sample (µg/ml):	1.12E+00	5.82E-01	Ca
	Uncorrected weight of impurity in sample (µg):	135.52	73.91	209.43
	Weight of impurity in blank (µg):	139.32	21.28	
	Minimum corrected weight of impurity in sample (µg):	0.00	52.64	52.64
	Maximum corrected weight of impurity in sample (µg):	0.00	52.64	52.64
Al	Measured concentration of impurity in sample (µg/ml):	9.28E-01	2.08E-01	Al
	Uncorrected weight of impurity in sample (µg):	112.29	26.42	138.70
	Weight of impurity in blank (µg):	10.56	4.15	
	Minimum corrected weight of impurity in sample (µg):	101.72	22.27	123.99
	Maximum corrected weight of impurity in sample (µg):	101.72	22.27	123.99
Ti	Measured concentration of impurity in sample (µg/ml):	5.67E-02	4.40E-02	Ti
	Uncorrected weight of impurity in sample (µg):	6.86	5.59	12.45
	Weight of impurity in blank (µg):	< 1.19	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	5.67	4.60	10.27
	Maximum corrected weight of impurity in sample (µg):	6.86	5.59	12.45
V	Measured concentration of impurity in sample (µg/ml):	3.03E-01	5.99E-02	V
	Uncorrected weight of impurity in sample (µg):	36.66	7.61	44.27
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	36.37	7.36	43.73
	Maximum corrected weight of impurity in sample (µg):	36.66	7.61	44.27

Comments

Data checked against the official results of analyses for RMAL2449 by FCM on 12/17/2009.

Fred C. Montgomery

Operator

2-16-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	116, 187, 189, 028, 185
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09120103	L09120403	
Number of compacts:		5		
Total volume of leach solution (ml):		121.0	125.0	
Radiochemical laboratory analysis number:		2449-003	2449-008	
Measured uranium concentration (µg/ml):		4.97E+00	3.20E-01	
Uncertainty in uranium concentration (µg/ml):		4.97E-01	3.20E-02	
Weight uranium leached (g):		6.01E-04	4.00E-05	6.41E-04
Uncertainty in weight uranium leached (g):		6.02E-05	4.01E-06	6.04E-05
Effective number of exposed kernels:		0.9	0.1	1.0
Uncertainty in effective number of exposed kernels:		0.1	0.0	0.1
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 4.99	< 5.15	<10.14
	Weight of impurity in blank (µg):	< 6.14	< 5.07	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.99	5.15	10.14
Cr	Measured concentration of impurity in sample (µg/ml):	8.80E-03	4.35E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.06	0.54	1.61
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	0.77	0.30	1.06
	Maximum corrected weight of impurity in sample (µg):	1.06	0.54	1.61
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24	< 0.47
	Weight of impurity in blank (µg):	< 0.28	< 0.23	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24	0.47
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.20	< 0.40
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.20	0.40
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.97	< 1.00	< 1.97
	Weight of impurity in blank (µg):	< 1.19	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.97	1.00	1.97
Ca	Measured concentration of impurity in sample (µg/ml):	1.49E+00	2.11E-01	Ca
	Uncorrected weight of impurity in sample (µg):	180.29	26.38	206.67
	Weight of impurity in blank (µg):	139.32	21.28	
	Minimum corrected weight of impurity in sample (µg):	40.98	5.10	46.07
	Maximum corrected weight of impurity in sample (µg):	40.98	5.10	46.07
Al	Measured concentration of impurity in sample (µg/ml):	8.42E-01	2.00E-01	Al
	Uncorrected weight of impurity in sample (µg):	101.88	25.00	126.88
	Weight of impurity in blank (µg):	10.56	4.15	
	Minimum corrected weight of impurity in sample (µg):	91.32	20.85	112.17
	Maximum corrected weight of impurity in sample (µg):	91.32	20.85	112.17
Ti	Measured concentration of impurity in sample (µg/ml):	5.12E-02	4.63E-02	Ti
	Uncorrected weight of impurity in sample (µg):	6.20	5.79	11.98
	Weight of impurity in blank (µg):	< 1.19	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	5.00	4.80	9.81
	Maximum corrected weight of impurity in sample (µg):	6.20	5.79	11.98
V	Measured concentration of impurity in sample (µg/ml):	2.90E-01	6.64E-02	V
	Uncorrected weight of impurity in sample (µg):	35.09	8.30	43.39
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	34.79	8.05	42.85
	Maximum corrected weight of impurity in sample (µg):	35.09	8.30	43.39

Comments

Data checked against the official results of analyses for RMAL2449 by FCM on 12/17/2009.

Fred C. Montgomery

Operator

2-16-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	103, 139, 016, 039, 108
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09120104	L09120404	
Number of compacts:	5		
Total volume of leach solution (ml):	123.0	123.0	
Radiochemical laboratory analysis number:	2449-004	2449-009	
Measured uranium concentration (µg/ml):	9.09E-03	2.89E-03	
Uncertainty in uranium concentration (µg/ml):	9.09E-04	2.89E-04	
Weight uranium leached (g):	1.12E-06	3.55E-07	1.47E-06
Uncertainty in weight uranium leached (g):	1.12E-07	3.56E-08	1.17E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 5.07	< 5.07
	Weight of impurity in blank (µg):	< 6.14	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	5.07	5.07
Cr	Measured concentration of impurity in sample (µg/ml):	8.30E-03	4.30E-03
	Uncorrected weight of impurity in sample (µg):	1.02	0.53
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	0.72	0.28
	Maximum corrected weight of impurity in sample (µg):	1.02	0.53
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.23
	Weight of impurity in blank (µg):	< 0.28	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.23
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.20
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.98	< 0.98
	Weight of impurity in blank (µg):	< 1.19	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.98	0.98
Ca	Measured concentration of impurity in sample (µg/ml):	1.36E+00	2.65E-01
	Uncorrected weight of impurity in sample (µg):	167.28	32.60
	Weight of impurity in blank (µg):	139.32	21.28
	Minimum corrected weight of impurity in sample (µg):	27.97	11.32
	Maximum corrected weight of impurity in sample (µg):	27.97	11.32
Al	Measured concentration of impurity in sample (µg/ml):	8.54E-01	2.36E-01
	Uncorrected weight of impurity in sample (µg):	105.04	29.03
	Weight of impurity in blank (µg):	10.56	4.15
	Minimum corrected weight of impurity in sample (µg):	94.48	24.88
	Maximum corrected weight of impurity in sample (µg):	94.48	24.88
Ti	Measured concentration of impurity in sample (µg/ml):	4.80E-02	4.54E-02
	Uncorrected weight of impurity in sample (µg):	5.90	5.58
	Weight of impurity in blank (µg):	< 1.19	< 0.98
	Minimum corrected weight of impurity in sample (µg):	4.71	4.60
	Maximum corrected weight of impurity in sample (µg):	5.90	5.58
V	Measured concentration of impurity in sample (µg/ml):	2.72E-01	6.38E-02
	Uncorrected weight of impurity in sample (µg):	33.46	7.85
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	33.16	7.60
	Maximum corrected weight of impurity in sample (µg):	33.46	7.85

Comments

Data checked against the official results of analyses for RMAL2449 by FCM on 12/17/2009.

Fred C. Montgomery

Operator

2-16-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-930858
Compact ID numbers:	088, 061, 042, 002, 080
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09120105	L09120405	
Number of compacts:		5		
Total volume of leach solution (ml):		118.0	120.0	
Radiochemical laboratory analysis number:		2449-005	2449-010	
Measured uranium concentration (µg/ml):		1.00E-02	3.11E-03	
Uncertainty in uranium concentration (µg/ml):		1.00E-03	3.11E-04	
Weight uranium leached (g):		1.18E-06	3.73E-07	1.55E-06
Uncertainty in weight uranium leached (g):		1.18E-07	3.74E-08	1.24E-07
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 4.86	< 4.94	< 9.81
	Weight of impurity in blank (µg):	< 6.14	< 5.07	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.86	4.94	9.81
Cr	Measured concentration of impurity in sample (µg/ml):	1.11E-02	5.39E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.31	0.65	1.96
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	1.01	0.40	1.41
	Maximum corrected weight of impurity in sample (µg):	1.31	0.65	1.96
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.23	< 0.45
	Weight of impurity in blank (µg):	< 0.28	< 0.23	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.23	0.45
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.19	< 0.39
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.19	0.39
Ni	Measured concentration of impurity in sample (µg/ml):	1.62E-02	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	1.91	< 0.96	< 2.87
	Weight of impurity in blank (µg):	< 1.19	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	0.72	0.00	0.72
	Maximum corrected weight of impurity in sample (µg):	1.91	0.96	2.87
Ca	Measured concentration of impurity in sample (µg/ml):	1.12E+00	3.79E-01	Ca
	Uncorrected weight of impurity in sample (µg):	132.16	45.48	177.64
	Weight of impurity in blank (µg):	139.32	21.28	
	Minimum corrected weight of impurity in sample (µg):	0.00	24.20	24.20
	Maximum corrected weight of impurity in sample (µg):	0.00	24.20	24.20
Al	Measured concentration of impurity in sample (µg/ml):	9.26E-01	2.09E-01	Al
	Uncorrected weight of impurity in sample (µg):	109.27	25.08	134.35
	Weight of impurity in blank (µg):	10.56	4.15	
	Minimum corrected weight of impurity in sample (µg):	98.70	20.93	119.64
	Maximum corrected weight of impurity in sample (µg):	98.70	20.93	119.64
Ti	Measured concentration of impurity in sample (µg/ml):	4.80E-02	4.78E-02	Ti
	Uncorrected weight of impurity in sample (µg):	5.66	5.74	11.40
	Weight of impurity in blank (µg):	< 1.19	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	4.47	4.75	9.22
	Maximum corrected weight of impurity in sample (µg):	5.66	5.74	11.40
V	Measured concentration of impurity in sample (µg/ml):	2.91E-01	6.82E-02	V
	Uncorrected weight of impurity in sample (µg):	34.34	8.18	42.52
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	34.04	7.94	41.98
	Maximum corrected weight of impurity in sample (µg):	34.34	8.18	42.52

Comments

Data checked against the official results of analyses for RMAL2449 by FCM on 12/17/2009.

Fred C. Montgomery

Operator

2-16-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09120102	L09120402	
Number of compacts:	None		
Total volume of leach solution (ml):	149.0	123.0	
Radiochemical laboratory analysis number:	2449-002	2449-007	
Measured uranium concentration (µg/ml):	<2.00E-04	<2.00E-04	
Uncertainty in uranium concentration (µg/ml):			
Weight uranium leached (g):	<2.98E-08	<2.46E-08	<5.44E-08
Uncertainty in weight uranium leached (g):			
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:			
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 6.14	< 5.07	<11.21
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.30	< 0.25	< 0.54
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.28	< 0.23	< 0.52
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.24	< 0.20	< 0.44
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 1.19	< 0.98	< 2.18
Ca	Measured concentration (µg/ml): 9.35E-01	1.73E-01	Ca
	Total weight of leached impurity (µg): 139.32	21.28	160.59
Al	Measured concentration (µg/ml): 7.09E-02	3.37E-02	Al
	Total weight of leached impurity (µg): 10.56	4.15	14.71
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 1.19	< 0.98	< 2.18
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.30	< 0.25	< 0.54

Comments

Data checked against the official results of analyses for RMAL2449 by FCM on 12/17/2009.

Fred C. Montgomery
Operator

2-16-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	069, 087, 046, 081, 194
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B09122801	B09123001	
Number of compacts:		5		
Total volume of leach solution (ml):		48.5	51.5	
Radiochemical laboratory analysis number:		2505-001	2505-006	
Measured uranium concentration (µg/ml):		7.09E-02	5.32E-04	
Uncertainty in uranium concentration (µg/ml):		7.09E-03	5.32E-05	
Weight uranium leached (g):		3.44E-06	2.74E-08	3.47E-06
Uncertainty in weight uranium leached (g):		3.47E-07	2.76E-09	3.47E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	1.44E-01	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	6.98	< 2.12	< 9.11
	Weight of impurity in blank (µg):	< 2.06	< 2.09	
	Minimum corrected weight of impurity in sample (µg):	4.92	0.00	4.92
	Maximum corrected weight of impurity in sample (µg):	6.98	2.12	9.11
Cr	Measured concentration of impurity in sample (µg/ml):	8.56E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.42	< 0.10	< 0.52
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.32	0.00	0.32
	Maximum corrected weight of impurity in sample (µg):	0.42	0.10	0.52
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.09	< 0.10	< 0.19
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.09	0.10	0.19
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08	< 0.16
	Weight of impurity in blank (µg):	< 0.08	< 0.08	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08	0.16
Ni	Measured concentration of impurity in sample (µg/ml):	1.06E-02	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.51	< 0.41	< 0.93
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	0.11	0.00	0.11
	Maximum corrected weight of impurity in sample (µg):	0.51	0.41	0.93
Ca	Measured concentration of impurity in sample (µg/ml):	1.74E+00	5.51E-01	Ca
	Uncorrected weight of impurity in sample (µg):	84.39	28.38	112.77
	Weight of impurity in blank (µg):	9.15	13.41	
	Minimum corrected weight of impurity in sample (µg):	75.24	14.97	90.21
	Maximum corrected weight of impurity in sample (µg):	75.24	14.97	90.21
Al	Measured concentration of impurity in sample (µg/ml):	4.46E+00	2.86E-02	Al
	Uncorrected weight of impurity in sample (µg):	216.31	1.47	217.78
	Weight of impurity in blank (µg):	1.15	0.89	
	Minimum corrected weight of impurity in sample (µg):	215.16	0.58	215.74
	Maximum corrected weight of impurity in sample (µg):	215.16	0.58	215.74
Ti	Measured concentration of impurity in sample (µg/ml):	1.40E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	6.79	< 0.41	< 7.20
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	6.39	0.00	6.39
	Maximum corrected weight of impurity in sample (µg):	6.79	0.41	7.20
V	Measured concentration of impurity in sample (µg/ml):	7.51E-01	2.90E-03	V
	Uncorrected weight of impurity in sample (µg):	36.42	0.15	36.57
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	36.32	0.05	36.37
	Maximum corrected weight of impurity in sample (µg):	36.42	0.15	36.57

Comments

Data checked against the official results of analyses for RMAL2505 by FCM on 1/28/2010

Fred C. Montgomery

Operator

2-16-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	116, 187, 189, 028, 185
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09122803	B09123003	
Number of compacts:	5		
Total volume of leach solution (ml):	50.1	51.8	
Radiochemical laboratory analysis number:	2505-003	2505-008	
Measured uranium concentration (µg/ml):	1.08E-01	9.80E-04	
Uncertainty in uranium concentration (µg/ml):	1.08E-02	9.80E-05	
Weight uranium leached (g):	5.41E-06	5.08E-08	5.46E-06
Uncertainty in weight uranium leached (g):	5.46E-07	5.12E-09	5.46E-07
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 2.06	< 2.13
	Weight of impurity in blank (µg):	< 2.06	< 2.09
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	2.06	2.13
Cr	Measured concentration of impurity in sample (µg/ml):	4.79E-03	< 2.00E-03
	Uncorrected weight of impurity in sample (µg):	0.24	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.14	0.00
	Maximum corrected weight of impurity in sample (µg):	0.24	0.10
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08
	Weight of impurity in blank (µg):	< 0.08	< 0.08
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.40	< 0.41
	Weight of impurity in blank (µg):	< 0.40	< 0.41
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.40	0.41
Ca	Measured concentration of impurity in sample (µg/ml):	1.33E+00	< 1.00E-01
	Uncorrected weight of impurity in sample (µg):	66.63	< 5.18
	Weight of impurity in blank (µg):	9.15	13.41
	Minimum corrected weight of impurity in sample (µg):	57.48	0.00
	Maximum corrected weight of impurity in sample (µg):	57.48	0.00
Al	Measured concentration of impurity in sample (µg/ml):	1.66E+00	3.22E-02
	Uncorrected weight of impurity in sample (µg):	83.17	1.67
	Weight of impurity in blank (µg):	1.15	0.89
	Minimum corrected weight of impurity in sample (µg):	82.02	0.78
	Maximum corrected weight of impurity in sample (µg):	82.02	0.78
Ti	Measured concentration of impurity in sample (µg/ml):	1.11E-01	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	5.56	< 0.41
	Weight of impurity in blank (µg):	< 0.40	< 0.41
	Minimum corrected weight of impurity in sample (µg):	5.16	0.00
	Maximum corrected weight of impurity in sample (µg):	5.56	0.41
V	Measured concentration of impurity in sample (µg/ml):	7.13E-01	4.12E-03
	Uncorrected weight of impurity in sample (µg):	35.72	0.21
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	35.62	0.11
	Maximum corrected weight of impurity in sample (µg):	35.72	0.21

Comments

Data checked against the official results of analyses for RMAL2505 by FCM on 1/28/2010

Fred C. Montgomery

Operator

2-16-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	103, 139, 016, 039, 108
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09122804	B09123004	
Number of compacts:	5		
Total volume of leach solution (ml):	50.4	51.3	
Radiochemical laboratory analysis number:	2505-004	2505-009	
Measured uranium concentration (µg/ml):	6.56E-02	9.96E-04	
Uncertainty in uranium concentration (µg/ml):	6.56E-03	9.96E-05	
Weight uranium leached (g):	3.31E-06	5.11E-08	3.36E-06
Uncertainty in weight uranium leached (g):	3.33E-07	5.15E-09	3.33E-07
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 2.08	< 2.11
	Weight of impurity in blank (µg):	< 2.06	< 2.09
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	2.08	2.11
Cr	Measured concentration of impurity in sample (µg/ml):	5.77E-03	< 2.00E-03
	Uncorrected weight of impurity in sample (µg):	0.29	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.19	0.00
	Maximum corrected weight of impurity in sample (µg):	0.29	0.10
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08
	Weight of impurity in blank (µg):	< 0.08	< 0.08
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08
Ni	Measured concentration of impurity in sample (µg/ml):	8.58E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	0.43	< 0.41
	Weight of impurity in blank (µg):	< 0.40	< 0.41
	Minimum corrected weight of impurity in sample (µg):	0.03	0.00
	Maximum corrected weight of impurity in sample (µg):	0.43	0.41
Ca	Measured concentration of impurity in sample (µg/ml):	3.22E+00	1.29E-01
	Uncorrected weight of impurity in sample (µg):	162.29	6.62
	Weight of impurity in blank (µg):	9.15	13.41
	Minimum corrected weight of impurity in sample (µg):	153.14	0.00
	Maximum corrected weight of impurity in sample (µg):	153.14	0.00
Al	Measured concentration of impurity in sample (µg/ml):	1.71E+00	4.25E-02
	Uncorrected weight of impurity in sample (µg):	86.18	2.18
	Weight of impurity in blank (µg):	1.15	0.89
	Minimum corrected weight of impurity in sample (µg):	85.03	1.29
	Maximum corrected weight of impurity in sample (µg):	85.03	1.29
Ti	Measured concentration of impurity in sample (µg/ml):	1.12E-01	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	5.64	< 0.41
	Weight of impurity in blank (µg):	< 0.40	< 0.41
	Minimum corrected weight of impurity in sample (µg):	5.24	0.00
	Maximum corrected weight of impurity in sample (µg):	5.64	0.41
V	Measured concentration of impurity in sample (µg/ml):	7.40E-01	3.24E-03
	Uncorrected weight of impurity in sample (µg):	37.30	0.17
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	37.20	0.06
	Maximum corrected weight of impurity in sample (µg):	37.30	0.17

Comments

Data checked against the official results of analyses for RMAL2505 by FCM on 1/28/2010

Fred C. Montgomery
Operator

2-16-2010
Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	088, 061, 042, 002, 080
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09122805	B09123005	
Number of compacts:	5		
Total volume of leach solution (ml):	48.8	51.5	
Radiochemical laboratory analysis number:	2505-005	2505-010	
Measured uranium concentration (µg/ml):	8.38E-02	1.04E-03	
Uncertainty in uranium concentration (µg/ml):	8.38E-03	1.04E-04	
Weight uranium leached (g):	4.09E-06	5.36E-08	4.14E-06
Uncertainty in weight uranium leached (g):	4.13E-07	5.40E-09	4.13E-07
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 2.01	< 2.12
	Weight of impurity in blank (µg):	< 2.06	< 2.09
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	2.01	2.12
Cr	Measured concentration of impurity in sample (µg/ml):	8.12E-03	< 2.00E-03
	Uncorrected weight of impurity in sample (µg):	0.40	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.30	0.00
	Maximum corrected weight of impurity in sample (µg):	0.40	0.10
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.09	< 0.10
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.09	0.10
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08
	Weight of impurity in blank (µg):	< 0.08	< 0.08
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08
Ni	Measured concentration of impurity in sample (µg/ml):	1.15E-02	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	0.56	< 0.41
	Weight of impurity in blank (µg):	< 0.40	< 0.41
	Minimum corrected weight of impurity in sample (µg):	0.16	0.00
	Maximum corrected weight of impurity in sample (µg):	0.56	0.41
Ca	Measured concentration of impurity in sample (µg/ml):	2.13E+00	< 1.00E-01
	Uncorrected weight of impurity in sample (µg):	103.94	< 5.15
	Weight of impurity in blank (µg):	9.15	13.41
	Minimum corrected weight of impurity in sample (µg):	94.79	0.00
	Maximum corrected weight of impurity in sample (µg):	94.79	0.00
Al	Measured concentration of impurity in sample (µg/ml):	1.80E+00	4.63E-02
	Uncorrected weight of impurity in sample (µg):	87.84	2.38
	Weight of impurity in blank (µg):	1.15	0.89
	Minimum corrected weight of impurity in sample (µg):	86.69	1.50
	Maximum corrected weight of impurity in sample (µg):	86.69	1.50
Ti	Measured concentration of impurity in sample (µg/ml):	1.26E-01	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	6.15	< 0.41
	Weight of impurity in blank (µg):	< 0.40	< 0.41
	Minimum corrected weight of impurity in sample (µg):	5.75	0.00
	Maximum corrected weight of impurity in sample (µg):	6.15	0.41
V	Measured concentration of impurity in sample (µg/ml):	6.92E-01	4.36E-03
	Uncorrected weight of impurity in sample (µg):	33.77	0.22
	Weight of impurity in blank (µg):	< 0.10	< 0.10
	Minimum corrected weight of impurity in sample (µg):	33.67	0.12
	Maximum corrected weight of impurity in sample (µg):	33.77	0.22

Comments

Data checked against the official results of analyses for RMAL2505 by FCM on 1/28/2010

Fred C. Montgomery

Operator

2-16-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Burn-Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_03.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B09122802	B09123002	
Number of compacts:	None		
Total volume of leach solution (ml):	50.0	50.8	
Radiochemical laboratory analysis number:	2505-002	2505-007	
Measured uranium concentration (µg/ml):	<2.00E-04	<2.00E-04	
Uncertainty in uranium concentration (µg/ml):			
Weight uranium leached (g):	<1.00E-08	<1.02E-08	<2.02E-08
Uncertainty in weight uranium leached (g):			
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:			
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 2.06	< 2.09	< 4.15
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.10	< 0.10	< 0.20
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.10	< 0.10	< 0.19
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.08	< 0.08	< 0.16
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 0.40	< 0.41	< 0.81
Ca	Measured concentration (µg/ml): 1.83E-01	2.64E-01	Ca
	Total weight of leached impurity (µg): 9.15	13.41	22.56
Al	Measured concentration (µg/ml): 2.30E-02	1.75E-02	Al
	Total weight of leached impurity (µg): 1.15	0.89	2.04
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 0.40	< 0.41	< 0.81
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.10	< 0.10	< 0.20

Comments

Data checked against the official results of analyses for RMAL2505 by FCM on 1/28/2010

Fred C. Montgomery
Operator

2-16-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	120, 184, 049, 144, 076
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09121102	L09121702	
Number of compacts:		5		
Total volume of leach solution (ml):		124.0	128.0	
Radiochemical laboratory analysis number:		2504-002	2504-007	
Measured uranium concentration (µg/ml):		8.94E-03	3.20E-03	
Uncertainty in uranium concentration (µg/ml):		8.94E-04	3.20E-04	
Weight uranium leached (g):		1.11E-06	4.10E-07	1.52E-06
Uncertainty in weight uranium leached (g):		1.11E-07	4.10E-08	1.18E-07
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 5.11	< 5.27	<10.38
	Weight of impurity in blank (µg):	< 6.06	< 5.03	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	5.11	5.27	10.38
Cr	Measured concentration of impurity in sample (µg/ml):	1.18E-02	6.63E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.46	0.85	2.31
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	1.17	0.60	1.77
	Maximum corrected weight of impurity in sample (µg):	1.46	0.85	2.31
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.24	< 0.24	< 0.48
	Weight of impurity in blank (µg):	< 0.28	< 0.23	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.24	0.24	0.48
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.21	< 0.41
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.21	0.41
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.99	< 1.02	< 2.02
	Weight of impurity in blank (µg):	< 1.18	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.99	1.02	2.02
Ca	Measured concentration of impurity in sample (µg/ml):	1.33E+00	3.68E-01	Ca
	Uncorrected weight of impurity in sample (µg):	164.92	47.10	212.02
	Weight of impurity in blank (µg):	47.63	<12.20	
	Minimum corrected weight of impurity in sample (µg):	117.29	34.90	152.20
	Maximum corrected weight of impurity in sample (µg):	117.29	47.10	164.40
Al	Measured concentration of impurity in sample (µg/ml):	6.05E-01	1.83E-01	Al
	Uncorrected weight of impurity in sample (µg):	75.02	23.42	98.44
	Weight of impurity in blank (µg):	9.60	3.25	
	Minimum corrected weight of impurity in sample (µg):	65.42	20.18	85.60
	Maximum corrected weight of impurity in sample (µg):	65.42	20.18	85.60
Ti	Measured concentration of impurity in sample (µg/ml):	3.65E-02	3.76E-02	Ti
	Uncorrected weight of impurity in sample (µg):	4.53	4.81	9.34
	Weight of impurity in blank (µg):	< 1.18	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	3.35	3.84	7.19
	Maximum corrected weight of impurity in sample (µg):	4.53	4.81	9.34
V	Measured concentration of impurity in sample (µg/ml):	1.93E-01	5.54E-02	V
	Uncorrected weight of impurity in sample (µg):	23.93	7.09	31.02
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	23.64	6.85	30.49
	Maximum corrected weight of impurity in sample (µg):	23.93	7.09	31.02

Comments

Data checked against the official results of analyses for RMAL2504 by FCM on 1/28/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	203, 096, 114, 191, 022
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09121103	L09121703	
Number of compacts:	5		
Total volume of leach solution (ml):	118.0	122.0	
Radiochemical laboratory analysis number:	2504-003	2504-008	
Measured uranium concentration (µg/ml):	9.06E-03	2.83E-03	
Uncertainty in uranium concentration (µg/ml):	9.06E-04	2.83E-04	
Weight uranium leached (g):	1.07E-06	3.45E-07	1.41E-06
Uncertainty in weight uranium leached (g):	1.07E-07	3.46E-08	1.13E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.86	< 5.03
	Weight of impurity in blank (µg):	< 6.06	< 5.03
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.86	5.03
Cr	Measured concentration of impurity in sample (µg/ml):	6.97E-03	7.66E-03
	Uncorrected weight of impurity in sample (µg):	0.82	0.93
	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.53	0.69
	Maximum corrected weight of impurity in sample (µg):	0.82	0.93
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.23
	Weight of impurity in blank (µg):	< 0.28	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.23
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.94	< 0.98
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.94	0.98
Ca	Measured concentration of impurity in sample (µg/ml):	6.84E-01	3.29E-01
	Uncorrected weight of impurity in sample (µg):	80.71	40.14
	Weight of impurity in blank (µg):	47.63	<12.20
	Minimum corrected weight of impurity in sample (µg):	33.08	27.94
	Maximum corrected weight of impurity in sample (µg):	33.08	40.14
Al	Measured concentration of impurity in sample (µg/ml):	6.30E-01	1.81E-01
	Uncorrected weight of impurity in sample (µg):	74.34	22.08
	Weight of impurity in blank (µg):	9.60	3.25
	Minimum corrected weight of impurity in sample (µg):	64.74	18.84
	Maximum corrected weight of impurity in sample (µg):	64.74	18.84
Ti	Measured concentration of impurity in sample (µg/ml):	2.94E-02	3.01E-02
	Uncorrected weight of impurity in sample (µg):	3.47	3.67
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	2.29	2.70
	Maximum corrected weight of impurity in sample (µg):	3.47	3.67
V	Measured concentration of impurity in sample (µg/ml):	1.99E-01	4.91E-02
	Uncorrected weight of impurity in sample (µg):	23.48	5.99
	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	23.19	5.75
	Maximum corrected weight of impurity in sample (µg):	23.48	5.99

Comments

Data checked against the official results of analyses for RMAL2504 by FCM on 1/28/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	171, 161, 025, 093, 117
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L09121104	L09121704	
Number of compacts:		5		
Total volume of leach solution (ml):		121.0	127.0	
Radiochemical laboratory analysis number:		2504-004	2504-009	
Measured uranium concentration (µg/ml):		8.57E-03	2.72E-03	
Uncertainty in uranium concentration (µg/ml):		8.57E-04	2.72E-04	
Weight uranium leached (g):		1.04E-06	3.45E-07	1.38E-06
Uncertainty in weight uranium leached (g):		1.04E-07	3.46E-08	1.09E-07
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 4.99	< 5.23	<10.22
	Weight of impurity in blank (µg):	< 6.06	< 5.03	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.99	5.23	10.22
Cr	Measured concentration of impurity in sample (µg/ml):	1.10E-02	6.14E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.33	0.78	2.11
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	1.04	0.54	1.57
	Maximum corrected weight of impurity in sample (µg):	1.33	0.78	2.11
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24	< 0.47
	Weight of impurity in blank (µg):	< 0.28	< 0.23	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24	0.47
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.21	< 0.40
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.21	0.40
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.97	< 1.02	< 1.98
	Weight of impurity in blank (µg):	< 1.18	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.97	1.02	1.98
Ca	Measured concentration of impurity in sample (µg/ml):	8.74E-01	6.00E-01	Ca
	Uncorrected weight of impurity in sample (µg):	105.75	76.20	181.95
	Weight of impurity in blank (µg):	47.63	<12.20	
	Minimum corrected weight of impurity in sample (µg):	58.13	64.00	122.13
	Maximum corrected weight of impurity in sample (µg):	58.13	76.20	134.33
Al	Measured concentration of impurity in sample (µg/ml):	7.53E-01	1.55E-01	Al
	Uncorrected weight of impurity in sample (µg):	91.11	19.69	110.80
	Weight of impurity in blank (µg):	9.60	3.25	
	Minimum corrected weight of impurity in sample (µg):	81.51	16.44	97.95
	Maximum corrected weight of impurity in sample (µg):	81.51	16.44	97.95
Ti	Measured concentration of impurity in sample (µg/ml):	4.60E-02	3.06E-02	Ti
	Uncorrected weight of impurity in sample (µg):	5.57	3.89	9.45
	Weight of impurity in blank (µg):	< 1.18	< 0.98	
	Minimum corrected weight of impurity in sample (µg):	4.39	2.91	7.30
	Maximum corrected weight of impurity in sample (µg):	5.57	3.89	9.45
V	Measured concentration of impurity in sample (µg/ml):	2.44E-01	4.04E-02	V
	Uncorrected weight of impurity in sample (µg):	29.52	5.13	34.65
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	29.23	4.89	34.12
	Maximum corrected weight of impurity in sample (µg):	29.52	5.13	34.65

Comments

Data checked against the official results of analyses for RMAL2504 by FCM on 1/28/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	138, 141, 005, 084, 021
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L09121105	L09121705	
Number of compacts:	5		
Total volume of leach solution (ml):	117.0	122.0	
Radiochemical laboratory analysis number:	2504-005	2504-010	
Measured uranium concentration (µg/ml):	1.00E-02	2.87E-03	
Uncertainty in uranium concentration (µg/ml):	1.00E-03	2.87E-04	
Weight uranium leached (g):	1.17E-06	3.50E-07	1.52E-06
Uncertainty in weight uranium leached (g):	1.17E-07	3.51E-08	1.22E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.82	< 5.03
	Weight of impurity in blank (µg):	< 6.06	< 5.03
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.82	5.03
Cr	Measured concentration of impurity in sample (µg/ml):	8.33E-03	7.26E-03
	Uncorrected weight of impurity in sample (µg):	0.97	0.89
	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.68	0.64
	Maximum corrected weight of impurity in sample (µg):	0.97	0.89
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.22	< 0.23
	Weight of impurity in blank (µg):	< 0.28	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.22	0.23
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.94	< 0.98
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.94	0.98
Ca	Measured concentration of impurity in sample (µg/ml):	7.72E-01	3.20E-01
	Uncorrected weight of impurity in sample (µg):	90.32	39.04
	Weight of impurity in blank (µg):	47.63	<12.20
	Minimum corrected weight of impurity in sample (µg):	42.70	26.84
	Maximum corrected weight of impurity in sample (µg):	42.70	39.04
Al	Measured concentration of impurity in sample (µg/ml):	7.64E-01	2.02E-01
	Uncorrected weight of impurity in sample (µg):	89.39	24.64
	Weight of impurity in blank (µg):	9.60	3.25
	Minimum corrected weight of impurity in sample (µg):	79.79	21.40
	Maximum corrected weight of impurity in sample (µg):	79.79	21.40
Ti	Measured concentration of impurity in sample (µg/ml):	3.92E-02	3.31E-02
	Uncorrected weight of impurity in sample (µg):	4.59	4.04
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	3.41	3.06
	Maximum corrected weight of impurity in sample (µg):	4.59	4.04
V	Measured concentration of impurity in sample (µg/ml):	2.34E-01	4.48E-02
	Uncorrected weight of impurity in sample (µg):	27.38	5.47
	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	27.08	5.22
	Maximum corrected weight of impurity in sample (µg):	27.38	5.47

Comments

Data checked against the official results of analyses for RMAL2504 by FCM on 1/28/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO ₂ Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total	
Deconsolidation-leach solution ID:		L09121101	L09121701		
Number of compacts:		None			
Total volume of leach solution (ml):		147.0	122.0		
Radiochemical laboratory analysis number:		2504-001	2504-006		
Measured uranium concentration (µg/ml):		<2.00E-04	<2.00E-04		
Uncertainty in uranium concentration (µg/ml):					
Weight uranium leached (g):		<2.94E-08	<2.44E-08		<5.38E-08
Uncertainty in weight uranium leached (g):					
Effective number of exposed kernels:		0.0	0.0		0.0
Uncertainty in effective number of exposed kernels:					
Fe	Measured concentration (µg/ml):	< 4.12E-02	< 4.12E-02	Fe	
	Total weight of leached impurity (µg):	< 6.06	< 5.03	<11.08	
Cr	Measured concentration (µg/ml):	< 2.00E-03	< 2.00E-03	Cr	
	Total weight of leached impurity (µg):	< 0.29	< 0.24	< 0.54	
Mn	Measured concentration (µg/ml):	< 1.91E-03	< 1.91E-03	Mn	
	Total weight of leached impurity (µg):	< 0.28	< 0.23	< 0.51	
Co	Measured concentration (µg/ml):	< 1.62E-03	< 1.62E-03	Co	
	Total weight of leached impurity (µg):	< 0.24	< 0.20	< 0.44	
Ni	Measured concentration (µg/ml):	< 8.00E-03	< 8.00E-03	Ni	
	Total weight of leached impurity (µg):	< 1.18	< 0.98	< 2.15	
Ca	Measured concentration (µg/ml):	3.24E-01	< 1.00E-01	Ca	
	Total weight of leached impurity (µg):	47.63	<12.20	<59.83	
Al	Measured concentration (µg/ml):	6.53E-02	2.66E-02	Al	
	Total weight of leached impurity (µg):	9.60	3.25	12.84	
Ti	Measured concentration (µg/ml):	< 8.00E-03	< 8.00E-03	Ti	
	Total weight of leached impurity (µg):	< 1.18	< 0.98	< 2.15	
V	Measured concentration (µg/ml):	< 2.00E-03	< 2.00E-03	V	
	Total weight of leached impurity (µg):	< 0.29	< 0.24	< 0.54	

Comments

Data checked against the official results of analyses for RMAL2504 by FCM on 1/28/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	120, 184, 049, 144, 076
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B10010402	B10010702	
Number of compacts:		5		
Total volume of leach solution (ml):		50.5	51.4	
Radiochemical laboratory analysis number:		2521-002	2521-007	
Measured uranium concentration (µg/ml):		6.65E-02	5.08E-04	
Uncertainty in uranium concentration (µg/ml):		6.65E-03	5.08E-05	
Weight uranium leached (g):		3.36E-06	2.61E-08	3.38E-06
Uncertainty in weight uranium leached (g):		3.39E-07	2.63E-09	3.39E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	4.27E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	2.16	< 2.12	< 4.27
	Weight of impurity in blank (µg):	< 2.04	< 2.10	
	Minimum corrected weight of impurity in sample (µg):	0.12	0.00	0.12
	Maximum corrected weight of impurity in sample (µg):	2.16	2.12	4.27
Cr	Measured concentration of impurity in sample (µg/ml):	7.58E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.38	< 0.10	< 0.49
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.28	0.00	0.28
	Maximum corrected weight of impurity in sample (µg):	0.38	0.10	0.49
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10	< 0.19
	Weight of impurity in blank (µg):	< 0.09	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10	0.19
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08	< 0.17
	Weight of impurity in blank (µg):	< 0.08	< 0.08	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08	0.17
Ni	Measured concentration of impurity in sample (µg/ml):	9.66E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.49	< 0.41	< 0.90
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	0.09	0.00	0.09
	Maximum corrected weight of impurity in sample (µg):	0.49	0.41	0.90
Ca	Measured concentration of impurity in sample (µg/ml):	1.57E+00	3.80E-01	Ca
	Uncorrected weight of impurity in sample (µg):	79.29	19.53	98.82
	Weight of impurity in blank (µg):	18.07	6.32	
	Minimum corrected weight of impurity in sample (µg):	61.22	13.21	74.43
	Maximum corrected weight of impurity in sample (µg):	61.22	13.21	74.43
Al	Measured concentration of impurity in sample (µg/ml):	1.71E+00	6.76E-02	Al
	Uncorrected weight of impurity in sample (µg):	86.36	3.47	89.83
	Weight of impurity in blank (µg):	2.12	1.12	
	Minimum corrected weight of impurity in sample (µg):	84.24	2.36	86.59
	Maximum corrected weight of impurity in sample (µg):	84.24	2.36	86.59
Ti	Measured concentration of impurity in sample (µg/ml):	1.04E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	5.25	< 0.41	< 5.66
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	4.86	0.00	4.86
	Maximum corrected weight of impurity in sample (µg):	5.25	0.41	5.66
V	Measured concentration of impurity in sample (µg/ml):	7.27E-01	2.06E-03	V
	Uncorrected weight of impurity in sample (µg):	36.71	0.11	36.82
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	36.61	0.00	36.62
	Maximum corrected weight of impurity in sample (µg):	36.71	0.11	36.82

Comments

Data checked against the official results of analyses for RMAL2521 by FCM on 1/25/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010

Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	203, 096, 114, 191, 022
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (q):	7.00E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B10010403	B10010703	
Number of compacts:		5		
Total volume of leach solution (ml):		50.5	51.9	
Radiochemical laboratory analysis number:		2521-003	2521-008	
Measured uranium concentration (µg/ml):		7.51E-02	2.80E-04	
Uncertainty in uranium concentration (µg/ml):		7.51E-03	2.80E-05	
Weight uranium leached (g):		3.79E-06	1.45E-08	3.81E-06
Uncertainty in weight uranium leached (g):		3.82E-07	1.46E-09	3.82E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	< 2.08	< 2.14	< 4.22
	Weight of impurity in blank (µg):	< 2.04	< 2.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	2.08	2.14	4.22
Cr	Measured concentration of impurity in sample (µg/ml):	5.63E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.28	< 0.10	< 0.39
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.19	0.00	0.19
	Maximum corrected weight of impurity in sample (µg):	0.28	0.10	0.39
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.10	< 0.10	< 0.20
	Weight of impurity in blank (µg):	< 0.09	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.10	0.10	0.20
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08	< 0.17
	Weight of impurity in blank (µg):	< 0.08	< 0.08	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08	0.17
Ni	Measured concentration of impurity in sample (µg/ml):	1.05E-02	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.53	< 0.42	< 0.95
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	0.13	0.00	0.13
	Maximum corrected weight of impurity in sample (µg):	0.53	0.42	0.95
Ca	Measured concentration of impurity in sample (µg/ml):	2.01E+00	2.35E-01	Ca
	Uncorrected weight of impurity in sample (µg):	101.51	12.20	113.70
	Weight of impurity in blank (µg):	18.07	6.32	
	Minimum corrected weight of impurity in sample (µg):	83.44	5.87	89.31
	Maximum corrected weight of impurity in sample (µg):	83.44	5.87	89.31
Al	Measured concentration of impurity in sample (µg/ml):	1.98E+00	2.73E-02	Al
	Uncorrected weight of impurity in sample (µg):	99.99	1.42	101.41
	Weight of impurity in blank (µg):	2.12	1.12	
	Minimum corrected weight of impurity in sample (µg):	97.87	0.30	98.17
	Maximum corrected weight of impurity in sample (µg):	97.87	0.30	98.17
Ti	Measured concentration of impurity in sample (µg/ml):	1.93E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	9.75	< 0.42	<10.16
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	9.35	0.00	9.35
	Maximum corrected weight of impurity in sample (µg):	9.75	0.42	10.16
V	Measured concentration of impurity in sample (µg/ml):	8.34E-01	< 2.00E-03	V
	Uncorrected weight of impurity in sample (µg):	42.12	< 0.10	<42.22
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	42.02	0.00	42.02
	Maximum corrected weight of impurity in sample (µg):	42.12	0.10	42.22

Comments

Data checked against the official results of analyses for RMAL2521 by FCM on 1/25/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	171, 161, 025, 093, 117
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B10010404	B10010704	
Number of compacts:		5		
Total volume of leach solution (ml):		48.9	51.7	
Radiochemical laboratory analysis number:		2521-004	2521-009	
Measured uranium concentration (µg/ml):		7.06E-02	4.48E-04	
Uncertainty in uranium concentration (µg/ml):		7.06E-03	4.48E-05	
Weight uranium leached (g):		3.45E-06	2.32E-08	3.48E-06
Uncertainty in weight uranium leached (g):		3.48E-07	2.33E-09	3.48E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	4.55E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	2.22	< 2.13	< 4.35
	Weight of impurity in blank (µg):	< 2.04	< 2.10	
	Minimum corrected weight of impurity in sample (µg):	0.19	0.00	0.19
	Maximum corrected weight of impurity in sample (µg):	2.22	2.13	4.35
Cr	Measured concentration of impurity in sample (µg/ml):	6.62E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.32	< 0.10	< 0.43
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.22	0.00	0.22
	Maximum corrected weight of impurity in sample (µg):	0.32	0.10	0.43
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.09	< 0.10	< 0.19
	Weight of impurity in blank (µg):	< 0.09	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.09	0.10	0.19
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08	< 0.16
	Weight of impurity in blank (µg):	< 0.08	< 0.08	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08	0.16
Ni	Measured concentration of impurity in sample (µg/ml):	1.00E-02	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.49	< 0.41	< 0.90
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	0.09	0.00	0.09
	Maximum corrected weight of impurity in sample (µg):	0.49	0.41	0.90
Ca	Measured concentration of impurity in sample (µg/ml):	1.51E+00	4.94E-01	Ca
	Uncorrected weight of impurity in sample (µg):	73.84	25.54	99.38
	Weight of impurity in blank (µg):	18.07	6.32	
	Minimum corrected weight of impurity in sample (µg):	55.77	19.22	74.99
	Maximum corrected weight of impurity in sample (µg):	55.77	19.22	74.99
Al	Measured concentration of impurity in sample (µg/ml):	2.19E+00	9.48E-02	Al
	Uncorrected weight of impurity in sample (µg):	107.09	4.90	111.99
	Weight of impurity in blank (µg):	2.12	1.12	
	Minimum corrected weight of impurity in sample (µg):	104.97	3.78	108.76
	Maximum corrected weight of impurity in sample (µg):	104.97	3.78	108.76
Ti	Measured concentration of impurity in sample (µg/ml):	1.35E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	6.60	< 0.41	< 7.02
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	6.21	0.00	6.21
	Maximum corrected weight of impurity in sample (µg):	6.60	0.41	7.02
V	Measured concentration of impurity in sample (µg/ml):	8.44E-01	3.71E-03	V
	Uncorrected weight of impurity in sample (µg):	41.27	0.19	41.46
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	41.17	0.09	41.26
	Maximum corrected weight of impurity in sample (µg):	41.27	0.19	41.46

Comments

Data checked against the official results of analyses for RMAL2521 by FCM on 1/25/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26B: Measurement of SIC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	138, 141, 005, 084, 021
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Burn-leach solution ID:		B10010405	B10010705	
Number of compacts:		5		
Total volume of leach solution (ml):		47.5	51.0	
Radiochemical laboratory analysis number:		2521-005	2521-010	
Measured uranium concentration (µg/ml):		8.61E-02	2.52E-04	
Uncertainty in uranium concentration (µg/ml):		8.61E-03	2.52E-05	
Weight uranium leached (g):		4.09E-06	1.29E-08	4.10E-06
Uncertainty in weight uranium leached (g):		4.13E-07	1.30E-09	4.13E-07
Number of leached kernels:		0.0	0.0	0.0
Uncertainty in number of leached kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	8.76E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	4.16	< 2.10	< 6.26
	Weight of impurity in blank (µg):	< 2.04	< 2.10	
	Minimum corrected weight of impurity in sample (µg):	2.12	0.00	2.12
	Maximum corrected weight of impurity in sample (µg):	4.16	2.10	6.26
Cr	Measured concentration of impurity in sample (µg/ml):	7.50E-03	< 2.00E-03	Cr
	Uncorrected weight of impurity in sample (µg):	0.36	< 0.10	< 0.46
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.26	0.00	0.26
	Maximum corrected weight of impurity in sample (µg):	0.36	0.10	0.46
Mn	Measured concentration of impurity in sample (µg/ml):	1.97E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	0.09	< 0.10	< 0.19
	Weight of impurity in blank (µg):	< 0.09	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.09	0.10	0.19
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.08	< 0.08	< 0.16
	Weight of impurity in blank (µg):	< 0.08	< 0.08	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.08	0.08	0.16
Ni	Measured concentration of impurity in sample (µg/ml):	1.36E-02	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	0.65	< 0.41	< 1.05
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	0.25	0.00	0.25
	Maximum corrected weight of impurity in sample (µg):	0.65	0.41	1.05
Ca	Measured concentration of impurity in sample (µg/ml):	1.76E+00	8.30E-01	Ca
	Uncorrected weight of impurity in sample (µg):	83.60	42.33	125.93
	Weight of impurity in blank (µg):	18.07	6.32	
	Minimum corrected weight of impurity in sample (µg):	65.53	36.01	101.54
	Maximum corrected weight of impurity in sample (µg):	65.53	36.01	101.54
Al	Measured concentration of impurity in sample (µg/ml):	1.99E+00	2.96E-02	Al
	Uncorrected weight of impurity in sample (µg):	94.53	1.51	96.03
	Weight of impurity in blank (µg):	2.12	1.12	
	Minimum corrected weight of impurity in sample (µg):	92.41	0.39	92.80
	Maximum corrected weight of impurity in sample (µg):	92.41	0.39	92.80
Ti	Measured concentration of impurity in sample (µg/ml):	1.38E-01	< 8.00E-03	Ti
	Uncorrected weight of impurity in sample (µg):	6.56	< 0.41	< 6.96
	Weight of impurity in blank (µg):	< 0.40	< 0.41	
	Minimum corrected weight of impurity in sample (µg):	6.16	0.00	6.16
	Maximum corrected weight of impurity in sample (µg):	6.56	0.41	6.96
V	Measured concentration of impurity in sample (µg/ml):	7.12E-01	2.38E-03	V
	Uncorrected weight of impurity in sample (µg):	33.82	0.12	33.94
	Weight of impurity in blank (µg):	< 0.10	< 0.10	
	Minimum corrected weight of impurity in sample (µg):	33.72	0.02	33.74
	Maximum corrected weight of impurity in sample (µg):	33.82	0.12	33.94

Comments

Data checked against the official results of analyses for RMAL2521 by FCM on 1/25/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26B: Measurement of SiC Burn-Leach Defects or Impurities by Burn-Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Burn-Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_04.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Burn-leach solution ID:	B10010401	B10010701	
Number of compacts:	None		
Total volume of leach solution (ml):	49.5	51.0	
Radiochemical laboratory analysis number:	2521-001	2521-006	
Measured uranium concentration (µg/ml):	<2.00E-04	<2.00E-04	
Uncertainty in uranium concentration (µg/ml):			
Weight uranium leached (g):	<9.90E-09	<1.02E-08	<2.01E-08
Uncertainty in weight uranium leached (g):			
Number of leached kernels:	0.0	0.0	0.0
Uncertainty in number of leached kernels:			
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 2.04	< 2.10	< 4.14
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.10	< 0.10	< 0.20
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.09	< 0.10	< 0.19
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.08	< 0.08	< 0.16
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 0.40	< 0.41	< 0.80
Ca	Measured concentration (µg/ml): 3.65E-01	1.24E-01	Ca
	Total weight of leached impurity (µg): 18.07	6.32	24.39
Al	Measured concentration (µg/ml): 4.28E-02	2.19E-02	Al
	Total weight of leached impurity (µg): 2.12	1.12	3.24
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 0.40	< 0.41	< 0.80
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.10	< 0.10	< 0.20

Comments

Data checked against the official results of analyses for RMAL2521 by FCM on 1/25/2010.
Ca reanalyzed on 2/17/2010. The Ca results in the table are from the reanalysis RMAL2581.

Fred C. Montgomery
Operator

3-1-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	104, 014, 143, 068, 125
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_05.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10011301	L10011501	
Number of compacts:	5		
Total volume of leach solution (ml):	120.0	128.0	
Radiochemical laboratory analysis number:	2580-001	2580-006	
Measured uranium concentration (µg/ml):	8.68E-03	2.57E-03	
Uncertainty in uranium concentration (µg/ml):	8.68E-04	2.57E-04	
Weight uranium leached (g):	1.04E-06	3.29E-07	1.37E-06
Uncertainty in weight uranium leached (g):	1.04E-07	3.29E-08	1.09E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.94	< 5.27
	Weight of impurity in blank (µg):	< 5.81	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.94	5.27
Cr	Measured concentration of impurity in sample (µg/ml):	1.72E-02	9.78E-03
	Uncorrected weight of impurity in sample (µg):	2.06	1.25
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	1.78	1.00
	Maximum corrected weight of impurity in sample (µg):	2.06	1.25
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24
	Weight of impurity in blank (µg):	< 0.27	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.21
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.21
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.96	< 1.02
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.96	1.02
Ca	Measured concentration of impurity in sample (µg/ml):	7.96E-01	5.04E-01
	Uncorrected weight of impurity in sample (µg):	95.52	64.51
	Weight of impurity in blank (µg):	<14.10	<12.60
	Minimum corrected weight of impurity in sample (µg):	81.42	51.91
	Maximum corrected weight of impurity in sample (µg):	95.52	64.51
Al	Measured concentration of impurity in sample (µg/ml):	8.96E-01	2.19E-01
	Uncorrected weight of impurity in sample (µg):	107.52	28.03
	Weight of impurity in blank (µg):	6.20	1.10
	Minimum corrected weight of impurity in sample (µg):	101.32	26.93
	Maximum corrected weight of impurity in sample (µg):	101.32	26.93
Ti	Measured concentration of impurity in sample (µg/ml):	4.88E-02	3.72E-02
	Uncorrected weight of impurity in sample (µg):	5.86	4.76
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	4.73	3.75
	Maximum corrected weight of impurity in sample (µg):	5.86	4.76
V	Measured concentration of impurity in sample (µg/ml):	2.36E-01	4.48E-02
	Uncorrected weight of impurity in sample (µg):	28.32	5.73
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	28.04	5.48
	Maximum corrected weight of impurity in sample (µg):	28.32	5.73

Comments

Data checked against the official results of analyses for RMA2580 by FCM on 2/17/2010.

Fred C. Montgomery

Operator

3-09-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	071, 165, 199, 176, 130
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_05.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10011302	L10011502	
Number of compacts:	5		
Total volume of leach solution (ml):	116.0	121.0	
Radiochemical laboratory analysis number:	2580-002	2541-007	
Measured uranium concentration (µg/ml):	1.02E-02	2.65E-03	
Uncertainty in uranium concentration (µg/ml):	1.02E-03	2.65E-04	
Weight uranium leached (g):	1.18E-06	3.21E-07	1.50E-06
Uncertainty in weight uranium leached (g):	1.19E-07	3.21E-08	1.23E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.78	< 4.99
	Weight of impurity in blank (µg):	< 5.81	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	4.78	4.99
	Measured concentration of impurity in sample (µg/ml):	1.43E-02	1.03E-02
	Uncorrected weight of impurity in sample (µg):	1.66	1.25
	Weight of impurity in blank (µg):	< 0.28	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	1.38	0.99
	Maximum corrected weight of impurity in sample (µg):	1.66	1.25
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.22	< 0.23
Co	Weight of impurity in blank (µg):	< 0.27	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.22	0.23
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.93	< 0.97
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.93	0.97
	Measured concentration of impurity in sample (µg/ml):	5.19E-01	< 1.00E-01
	Uncorrected weight of impurity in sample (µg):	60.20	<12.10
	Weight of impurity in blank (µg):	<14.10	<12.60
Ti	Minimum corrected weight of impurity in sample (µg):	46.10	0.00
	Maximum corrected weight of impurity in sample (µg):	60.20	12.10
	Measured concentration of impurity in sample (µg/ml):	7.86E-01	1.64E-01
	Uncorrected weight of impurity in sample (µg):	91.18	19.84
V	Weight of impurity in blank (µg):	6.20	1.10
	Minimum corrected weight of impurity in sample (µg):	84.97	18.74
	Maximum corrected weight of impurity in sample (µg):	84.97	18.74
	Measured concentration of impurity in sample (µg/ml):	3.74E-02	3.25E-02
	Uncorrected weight of impurity in sample (µg):	4.34	3.93
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	3.21	2.92
	Maximum corrected weight of impurity in sample (µg):	4.34	3.93
	Measured concentration of impurity in sample (µg/ml):	2.47E-01	5.01E-02
	Uncorrected weight of impurity in sample (µg):	28.65	6.06
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	28.37	5.81
	Maximum corrected weight of impurity in sample (µg):	28.65	6.06

Comments

Data checked against the official results of analyses for RMAL2580 by FCM on 2/17/2010.

Fred C. Montgomery

Operator

3-09-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	059, 100, 177, 090, 024
DRF filename:	\\ymc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_05.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10011304	L10011504	
Number of compacts:	5		
Total volume of leach solution (ml):	121.0	128.0	
Radiochemical laboratory analysis number:	2580-004	2580-009	
Measured uranium concentration (µg/ml):	7.66E-03	2.16E-03	
Uncertainty in uranium concentration (µg/ml):	7.66E-04	2.16E-04	
Weight uranium leached (g):	9.27E-07	2.76E-07	1.20E-06
Uncertainty in weight uranium leached (g):	9.28E-08	2.77E-08	9.69E-08
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.99	< 5.27
	Weight of impurity in blank (µg):	< 5.81	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.99	5.27
Cr	Measured concentration of impurity in sample (µg/ml):	9.53E-03	1.19E-02
	Uncorrected weight of impurity in sample (µg):	1.15	1.52
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	0.87	1.27
	Maximum corrected weight of impurity in sample (µg):	1.15	1.52
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24
	Weight of impurity in blank (µg):	< 0.27	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.21
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.21
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.97	< 1.02
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.97	1.02
Ca	Measured concentration of impurity in sample (µg/ml):	4.35E-01	1.61E-01
	Uncorrected weight of impurity in sample (µg):	52.64	20.61
	Weight of impurity in blank (µg):	<14.10	<12.60
	Minimum corrected weight of impurity in sample (µg):	38.54	8.01
	Maximum corrected weight of impurity in sample (µg):	52.64	20.61
Al	Measured concentration of impurity in sample (µg/ml):	7.43E-01	1.90E-01
	Uncorrected weight of impurity in sample (µg):	89.90	24.32
	Weight of impurity in blank (µg):	6.20	1.10
	Minimum corrected weight of impurity in sample (µg):	83.70	23.22
	Maximum corrected weight of impurity in sample (µg):	83.70	23.22
Ti	Measured concentration of impurity in sample (µg/ml):	3.62E-02	3.48E-02
	Uncorrected weight of impurity in sample (µg):	4.38	4.45
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	3.25	3.45
	Maximum corrected weight of impurity in sample (µg):	4.38	4.45
V	Measured concentration of impurity in sample (µg/ml):	2.23E-01	4.66E-02
	Uncorrected weight of impurity in sample (µg):	26.98	5.96
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	26.70	5.71
	Maximum corrected weight of impurity in sample (µg):	26.98	5.96

Comments

Data checked against the official results of analyses for RMA2580 by FCM on 2/17/2010.

Fred C. Montgomery

Operator

3-09-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	123, 131, 006, 083, 017
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_05.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10011305	L10011505	
Number of compacts:	5		
Total volume of leach solution (ml):	119.0	127.0	
Radiochemical laboratory analysis number:	2580-005	2580-010	
Measured uranium concentration (µg/ml):	3.75E+00	2.87E-01	
Uncertainty in uranium concentration (µg/ml):	3.75E-01	2.87E-02	
Weight uranium leached (g):	4.46E-04	3.64E-05	4.83E-04
Uncertainty in weight uranium leached (g):	4.47E-05	3.65E-06	4.48E-05
Effective number of exposed kernels:	0.7	0.1	0.8
Uncertainty in effective number of exposed kernels:	0.1	0.0	0.1
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.90	< 5.23
	Weight of impurity in blank (µg):	< 5.81	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.90	5.23
Cr	Measured concentration of impurity in sample (µg/ml):	1.14E-02	1.25E-02
	Uncorrected weight of impurity in sample (µg):	1.36	1.59
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	1.07	1.34
	Maximum corrected weight of impurity in sample (µg):	1.36	1.59
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24
	Weight of impurity in blank (µg):	< 0.27	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.21
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.21
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.95	< 1.02
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.95	1.02
Ca	Measured concentration of impurity in sample (µg/ml):	4.44E-01	5.84E-01
	Uncorrected weight of impurity in sample (µg):	52.84	74.17
	Weight of impurity in blank (µg):	<14.10	<12.60
	Minimum corrected weight of impurity in sample (µg):	38.74	61.57
	Maximum corrected weight of impurity in sample (µg):	52.84	74.17
Al	Measured concentration of impurity in sample (µg/ml):	7.54E-01	2.02E-01
	Uncorrected weight of impurity in sample (µg):	89.73	25.65
	Weight of impurity in blank (µg):	6.20	1.10
	Minimum corrected weight of impurity in sample (µg):	83.52	24.55
	Maximum corrected weight of impurity in sample (µg):	83.52	24.55
Ti	Measured concentration of impurity in sample (µg/ml):	3.61E-02	3.60E-02
	Uncorrected weight of impurity in sample (µg):	4.30	4.57
	Weight of impurity in blank (µg):	< 1.13	< 1.01
	Minimum corrected weight of impurity in sample (µg):	3.17	3.56
	Maximum corrected weight of impurity in sample (µg):	4.30	4.57
V	Measured concentration of impurity in sample (µg/ml):	2.48E-01	5.15E-02
	Uncorrected weight of impurity in sample (µg):	29.51	6.54
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	29.23	6.29
	Maximum corrected weight of impurity in sample (µg):	29.51	6.54

Comments

Data checked against the official results of analyses for RMA2580 by FCM on 2/17/2010.

Fred C. Montgomery

Operator

3-09-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_05.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10011303	L10011503	
Number of compacts:	None		
Total volume of leach solution (ml):	141.0	126.0	
Radiochemical laboratory analysis number:	2580-003	2580-008	
Measured uranium concentration (µg/ml):	<2.00E-04	2.62E-03	
Uncertainty in uranium concentration (µg/ml):		2.62E-04	
Weight uranium leached (g):	<2.82E-08	3.30E-07	<3.58E-07
Uncertainty in weight uranium leached (g):		3.31E-08	
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 5.81	< 5.19	<11.00
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.28	< 0.25	< 0.53
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.27	< 0.24	< 0.51
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.23	< 0.20	< 0.43
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 1.13	< 1.01	< 2.14
Ca	Measured concentration (µg/ml): < 1.00E-01	< 1.00E-01	Ca
	Total weight of leached impurity (µg): <14.10	<12.60	<26.70
Al	Measured concentration (µg/ml): 4.40E-02	8.75E-03	Al
	Total weight of leached impurity (µg): 6.20	1.10	7.31
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 1.13	< 1.01	< 2.14
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.28	< 0.25	< 0.53

Comments

Data checked against the official results of analyses for RMA2580 by FCM on 2/17/2010.

Fred C. Montgomery

Operator

3-09-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	094, 118, 053, 159, 126
DRF filename:	\\vmc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_06.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10012601	L10020201	
Number of compacts:	5		
Total volume of leach solution (ml):	122.0	124.0	
Radiochemical laboratory analysis number:	2593-001	2593-006	
Measured uranium concentration (µg/ml):	9.01E-03	2.54E-03	
Uncertainty in uranium concentration (µg/ml):	9.01E-04	2.54E-04	
Weight uranium leached (g):	1.10E-06	3.15E-07	1.41E-06
Uncertainty in weight uranium leached (g):	1.10E-07	3.15E-08	1.15E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 5.03	< 5.11
	Weight of impurity in blank (µg):	< 6.10	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	5.03	5.11
Cr	Measured concentration of impurity in sample (µg/ml):	1.49E-02	8.26E-03
	Uncorrected weight of impurity in sample (µg):	1.82	1.02
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	1.52	0.78
	Maximum corrected weight of impurity in sample (µg):	1.82	1.02
Mn	Measured concentration of impurity in sample (µg/ml):	1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	0.23	< 0.24
	Weight of impurity in blank (µg):	< 0.28	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.20
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.98	< 0.99
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.98	0.99
Ca	Measured concentration of impurity in sample (µg/ml):	6.72E-01	6.82E-01
	Uncorrected weight of impurity in sample (µg):	81.98	84.57
	Weight of impurity in blank (µg):	<14.80	25.34
	Minimum corrected weight of impurity in sample (µg):	67.18	59.23
	Maximum corrected weight of impurity in sample (µg):	81.98	59.23
Al	Measured concentration of impurity in sample (µg/ml):	8.52E-01	2.24E-01
	Uncorrected weight of impurity in sample (µg):	103.94	27.78
	Weight of impurity in blank (µg):	10.45	4.13
	Minimum corrected weight of impurity in sample (µg):	93.50	23.64
	Maximum corrected weight of impurity in sample (µg):	93.50	23.64
Ti	Measured concentration of impurity in sample (µg/ml):	5.10E-02	3.79E-02
	Uncorrected weight of impurity in sample (µg):	6.22	4.70
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	5.04	3.72
	Maximum corrected weight of impurity in sample (µg):	6.22	4.70
V	Measured concentration of impurity in sample (µg/ml):	2.56E-01	4.89E-02
	Uncorrected weight of impurity in sample (µg):	31.23	6.06
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	30.94	5.82
	Maximum corrected weight of impurity in sample (µg):	31.23	6.06

Comments

Data checked against the official results of analyses for RMA2593 by FCM on 3/01/2010.

Fred C. Montgomery
Operator

3-8-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	164, 172, 015, 196, 192
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_06.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10012602	L10020202	
Number of compacts:	5		
Total volume of leach solution (ml):	123.0	129.0	
Radiochemical laboratory analysis number:	2593-002	2593-007	
Measured uranium concentration (µg/ml):	8.92E-03	2.39E-03	
Uncertainty in uranium concentration (µg/ml):	8.92E-04	2.39E-04	
Weight uranium leached (g):	1.10E-06	3.08E-07	1.41E-06
Uncertainty in weight uranium leached (g):	1.10E-07	3.09E-08	1.14E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 5.07	< 5.31
	Weight of impurity in blank (µg):	< 6.10	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	5.07	5.31
Cr	Measured concentration of impurity in sample (µg/ml):	1.42E-02	9.45E-03
	Uncorrected weight of impurity in sample (µg):	1.75	1.22
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	1.45	0.97
	Maximum corrected weight of impurity in sample (µg):	1.75	1.22
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.25
	Weight of impurity in blank (µg):	< 0.28	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.25
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.21
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.21
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.98	< 1.03
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.98	1.03
Ca	Measured concentration of impurity in sample (µg/ml):	6.46E-01	< 1.00E-01
	Uncorrected weight of impurity in sample (µg):	79.46	<12.90
	Weight of impurity in blank (µg):	<14.80	25.34
	Minimum corrected weight of impurity in sample (µg):	64.66	0.00
	Maximum corrected weight of impurity in sample (µg):	79.46	0.00
Al	Measured concentration of impurity in sample (µg/ml):	7.22E-01	1.51E-01
	Uncorrected weight of impurity in sample (µg):	88.81	19.48
	Weight of impurity in blank (µg):	10.45	4.13
	Minimum corrected weight of impurity in sample (µg):	78.36	15.35
	Maximum corrected weight of impurity in sample (µg):	78.36	15.35
Ti	Measured concentration of impurity in sample (µg/ml):	4.88E-02	3.62E-02
	Uncorrected weight of impurity in sample (µg):	6.00	4.67
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	4.82	3.69
	Maximum corrected weight of impurity in sample (µg):	6.00	4.67
V	Measured concentration of impurity in sample (µg/ml):	2.37E-01	4.66E-02
	Uncorrected weight of impurity in sample (µg):	29.15	6.01
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	28.86	5.77
	Maximum corrected weight of impurity in sample (µg):	29.15	6.01

Comments

Data checked against the official results of analyses for RMA12593 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-8-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	073, 107, 082, 201, 058
DRF filename:	\\vmc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_06.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10012603	L10020203	
Number of compacts:	5		
Total volume of leach solution (ml):	119.0	126.0	
Radiochemical laboratory analysis number:	2593-003	2593-008	
Measured uranium concentration (µg/ml):	8.32E-03	2.16E-03	
Uncertainty in uranium concentration (µg/ml):	8.32E-04	2.16E-04	
Weight uranium leached (g):	9.90E-07	2.72E-07	1.26E-06
Uncertainty in weight uranium leached (g):	9.92E-08	2.73E-08	1.03E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.90	< 5.19
	Weight of impurity in blank (µg):	< 6.10	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.90	5.19
Cr	Measured concentration of impurity in sample (µg/ml):	9.53E-03	1.00E-02
	Uncorrected weight of impurity in sample (µg):	1.13	1.26
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	0.84	1.01
	Maximum corrected weight of impurity in sample (µg):	1.13	1.26
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.24
	Weight of impurity in blank (µg):	< 0.28	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.24
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.95	< 1.01
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.95	1.01
Ca	Measured concentration of impurity in sample (µg/ml):	5.82E-01	< 1.00E-01
	Uncorrected weight of impurity in sample (µg):	69.26	<12.60
	Weight of impurity in blank (µg):	<14.80	25.34
	Minimum corrected weight of impurity in sample (µg):	54.46	0.00
	Maximum corrected weight of impurity in sample (µg):	69.26	0.00
Al	Measured concentration of impurity in sample (µg/ml):	7.50E-01	1.82E-01
	Uncorrected weight of impurity in sample (µg):	89.25	22.93
	Weight of impurity in blank (µg):	10.45	4.13
	Minimum corrected weight of impurity in sample (µg):	78.80	18.80
	Maximum corrected weight of impurity in sample (µg):	78.80	18.80
Ti	Measured concentration of impurity in sample (µg/ml):	3.96E-02	3.73E-02
	Uncorrected weight of impurity in sample (µg):	4.71	4.70
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	3.53	3.72
	Maximum corrected weight of impurity in sample (µg):	4.71	4.70
V	Measured concentration of impurity in sample (µg/ml):	2.40E-01	4.66E-02
	Uncorrected weight of impurity in sample (µg):	28.56	5.87
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	28.26	5.63
	Maximum corrected weight of impurity in sample (µg):	28.56	5.87

Comments

Data checked against the official results of analyses for RMAL2593 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	099, 102, 169, 013, 055
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_06.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10012605	L10020205	
Number of compacts:	5		
Total volume of leach solution (ml):	119.0	122.0	
Radiochemical laboratory analysis number:	2593-005	2593-010	
Measured uranium concentration (µg/ml):	9.09E-03	2.48E-03	
Uncertainty in uranium concentration (µg/ml):	9.09E-04	2.48E-04	
Weight uranium leached (g):	1.08E-06	3.03E-07	1.38E-06
Uncertainty in weight uranium leached (g):	1.08E-07	3.03E-08	1.12E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.90	< 5.03
	Weight of impurity in blank (µg):	< 6.10	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.90	5.03
Cr	Measured concentration of impurity in sample (µg/ml):	1.06E-02	9.90E-03
	Uncorrected weight of impurity in sample (µg):	1.26	1.21
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	0.97	0.96
	Maximum corrected weight of impurity in sample (µg):	1.26	1.21
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.23
	Weight of impurity in blank (µg):	< 0.28	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.23
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.95	< 0.98
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.95	0.98
Ca	Measured concentration of impurity in sample (µg/ml):	7.74E-01	2.56E-01
	Uncorrected weight of impurity in sample (µg):	92.11	31.23
	Weight of impurity in blank (µg):	<14.80	25.34
	Minimum corrected weight of impurity in sample (µg):	77.31	5.89
	Maximum corrected weight of impurity in sample (µg):	92.11	5.89
Al	Measured concentration of impurity in sample (µg/ml):	7.46E-01	2.03E-01
	Uncorrected weight of impurity in sample (µg):	88.77	24.77
	Weight of impurity in blank (µg):	10.45	4.13
	Minimum corrected weight of impurity in sample (µg):	78.33	20.63
	Maximum corrected weight of impurity in sample (µg):	78.33	20.63
Ti	Measured concentration of impurity in sample (µg/ml):	4.12E-02	4.16E-02
	Uncorrected weight of impurity in sample (µg):	4.90	5.08
	Weight of impurity in blank (µg):	< 1.18	< 0.98
	Minimum corrected weight of impurity in sample (µg):	3.72	4.09
	Maximum corrected weight of impurity in sample (µg):	4.90	5.08
V	Measured concentration of impurity in sample (µg/ml):	2.46E-01	5.29E-02
	Uncorrected weight of impurity in sample (µg):	29.27	6.45
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	28.98	6.21
	Maximum corrected weight of impurity in sample (µg):	29.27	6.45

Comments

Data checked against the official results of analyses for RMAL2593 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO ₂ Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_06.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10012604	L10020204	
Number of compacts:	None		
Total volume of leach solution (ml):	148.0	123.0	
Radiochemical laboratory analysis number:	2593-004	2593-009	
Measured uranium concentration (µg/ml):	<2.00E-04	<2.00E-04	
Uncertainty in uranium concentration (µg/ml):			
Weight uranium leached (g):	<2.96E-08	<2.46E-08	<5.42E-08
Uncertainty in weight uranium leached (g):			
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:			
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 6.10	< 5.07	<11.17
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.30	< 0.25	< 0.54
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.28	< 0.23	< 0.52
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.24	< 0.20	< 0.44
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 1.18	< 0.98	< 2.17
Ca	Measured concentration (µg/ml): < 1.00E-01	2.06E-01	Ca
	Total weight of leached impurity (µg): <14.80	25.34	<40.14
Al	Measured concentration (µg/ml): 7.06E-02	3.36E-02	Al
	Total weight of leached impurity (µg): 10.45	4.13	14.58
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 1.18	< 0.98	< 2.17
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.30	< 0.25	< 0.54

Comments

Data checked against the official results of analyses for RMA2593 by FCM on 3/01/2010.

Fred C. Montgomery
Operator

3-08-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	163, 122, 097, 023, 030
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_07.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

		First Leach	Second Leach	Total
Deconsolidation-leach solution ID:		L10020502	L10021002	
Number of compacts:		5		
Total volume of leach solution (ml):		120.0	120.0	
Radiochemical laboratory analysis number:		2594-002	2594-007	
Measured uranium concentration (µg/ml):		8.13E-03	2.32E-03	
Uncertainty in uranium concentration (µg/ml):		8.13E-04	2.32E-04	
Weight uranium leached (g):		9.76E-07	2.78E-07	1.25E-06
Uncertainty in weight uranium leached (g):		9.77E-08	2.79E-08	1.02E-07
Effective number of exposed kernels:		0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:		0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	8.31E-02	< 4.12E-02	Fe
	Uncorrected weight of impurity in sample (µg):	9.97	< 4.94	<14.92
	Weight of impurity in blank (µg):	< 6.18	< 5.19	
	Minimum corrected weight of impurity in sample (µg):	3.79	0.00	3.79
	Maximum corrected weight of impurity in sample (µg):	9.97	4.94	14.92
Cr	Measured concentration of impurity in sample (µg/ml):	1.42E-02	7.29E-03	Cr
	Uncorrected weight of impurity in sample (µg):	1.70	0.87	2.58
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	1.40	0.62	2.03
	Maximum corrected weight of impurity in sample (µg):	1.70	0.87	2.58
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03	Mn
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.23	< 0.46
	Weight of impurity in blank (µg):	< 0.29	< 0.24	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.23	0.46
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03	Co
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.19	< 0.39
	Weight of impurity in blank (µg):	< 0.24	< 0.20	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.19	0.39
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03	Ni
	Uncorrected weight of impurity in sample (µg):	< 0.96	< 0.96	< 1.92
	Weight of impurity in blank (µg):	< 1.20	< 1.01	
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.96	0.96	1.92
Ca	Measured concentration of impurity in sample (µg/ml):	8.99E-01	8.38E-01	Ca
	Uncorrected weight of impurity in sample (µg):	107.88	100.56	208.44
	Weight of impurity in blank (µg):	63.60	65.27	
	Minimum corrected weight of impurity in sample (µg):	44.28	35.29	79.57
	Maximum corrected weight of impurity in sample (µg):	44.28	35.29	79.57
Al	Measured concentration of impurity in sample (µg/ml):	9.96E-01	2.43E-01	Al
	Uncorrected weight of impurity in sample (µg):	119.52	29.16	148.68
	Weight of impurity in blank (µg):	14.00	3.65	
	Minimum corrected weight of impurity in sample (µg):	105.53	25.51	131.03
	Maximum corrected weight of impurity in sample (µg):	105.53	25.51	131.03
Ti	Measured concentration of impurity in sample (µg/ml):	5.44E-02	4.42E-02	Ti
	Uncorrected weight of impurity in sample (µg):	6.53	5.30	11.83
	Weight of impurity in blank (µg):	< 1.20	< 1.01	
	Minimum corrected weight of impurity in sample (µg):	5.33	4.30	9.62
	Maximum corrected weight of impurity in sample (µg):	6.53	5.30	11.83
V	Measured concentration of impurity in sample (µg/ml):	2.71E-01	5.70E-02	V
	Uncorrected weight of impurity in sample (µg):	32.52	6.84	39.36
	Weight of impurity in blank (µg):	< 0.30	< 0.25	
	Minimum corrected weight of impurity in sample (µg):	32.22	6.59	38.81
	Maximum corrected weight of impurity in sample (µg):	32.52	6.84	39.36

Comments

Data checked against the official results of analyses for RMA2594 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	086, 026, 019, 020, 063
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_07.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020503	L10021003	
Number of compacts:	5		
Total volume of leach solution (ml):	121.0	123.0	
Radiochemical laboratory analysis number:	2594-003	2594-008	
Measured uranium concentration (µg/ml):	1.08E-02	2.19E-03	
Uncertainty in uranium concentration (µg/ml):	1.08E-03	2.19E-04	
Weight uranium leached (g):	1.31E-06	2.69E-07	1.58E-06
Uncertainty in weight uranium leached (g):	1.31E-07	2.70E-08	1.34E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.99	< 5.07
	Weight of impurity in blank (µg):	< 6.18	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	4.99	5.07
	Measured concentration of impurity in sample (µg/ml):	1.16E-02	5.86E-03
	Uncorrected weight of impurity in sample (µg):	1.40	0.72
	Weight of impurity in blank (µg):	< 0.30	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	1.10	0.47
	Maximum corrected weight of impurity in sample (µg):	1.40	0.72
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.23
Co	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.23
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.20
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.97	< 0.98
	Weight of impurity in blank (µg):	< 1.20	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.97	0.98
	Measured concentration of impurity in sample (µg/ml):	7.82E-01	2.63E-01
	Uncorrected weight of impurity in sample (µg):	94.62	32.35
	Weight of impurity in blank (µg):	63.60	65.27
Ti	Minimum corrected weight of impurity in sample (µg):	31.02	0.00
	Maximum corrected weight of impurity in sample (µg):	31.02	0.00
	Measured concentration of impurity in sample (µg/ml):	8.06E-01	1.59E-01
	Uncorrected weight of impurity in sample (µg):	97.53	19.56
V	Weight of impurity in blank (µg):	14.00	3.65
	Minimum corrected weight of impurity in sample (µg):	83.53	15.90
	Maximum corrected weight of impurity in sample (µg):	83.53	15.90
	Measured concentration of impurity in sample (µg/ml):	4.24E-02	3.49E-02
	Uncorrected weight of impurity in sample (µg):	5.13	4.29
	Weight of impurity in blank (µg):	< 1.20	< 1.01
	Minimum corrected weight of impurity in sample (µg):	3.93	3.28
	Maximum corrected weight of impurity in sample (µg):	5.13	4.29
	Measured concentration of impurity in sample (µg/ml):	2.60E-01	5.42E-02
	Uncorrected weight of impurity in sample (µg):	31.46	6.67
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	31.16	6.41
	Maximum corrected weight of impurity in sample (µg):	31.46	6.67

Comments

Data checked against the official results of analyses for RMAL2594 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO ₂ Fuel, from G73H-10-93085B
Compact ID numbers:	115, 170, 162, 007, 008
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_07.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020504	L10021004	
Number of compacts:	5		
Total volume of leach solution (ml):	116.0	127.0	
Radiochemical laboratory analysis number:	2594-004	2594-009	
Measured uranium concentration (µg/ml):	7.98E-03	2.06E-03	
Uncertainty in uranium concentration (µg/ml):	7.98E-04	2.06E-04	
Weight uranium leached (g):	9.26E-07	2.62E-07	1.19E-06
Uncertainty in weight uranium leached (g):	9.27E-08	2.62E-08	9.63E-08
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.78	< 5.23
	Weight of impurity in blank (µg):	< 6.18	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	4.78	5.23
Cr	Measured concentration of impurity in sample (µg/ml):	1.03E-02	7.72E-03
	Uncorrected weight of impurity in sample (µg):	1.19	0.98
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	0.89	0.73
	Maximum corrected weight of impurity in sample (µg):	1.19	0.98
Mn	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.22	< 0.24
	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.22	0.24
Co	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.21
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.21
Ni	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.93	< 1.02
	Weight of impurity in blank (µg):	< 1.20	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.93	1.02
Ca	Measured concentration of impurity in sample (µg/ml):	1.02E+00	2.27E-01
	Uncorrected weight of impurity in sample (µg):	118.32	28.83
	Weight of impurity in blank (µg):	63.60	65.27
	Minimum corrected weight of impurity in sample (µg):	54.72	0.00
	Maximum corrected weight of impurity in sample (µg):	54.72	0.00
Al	Measured concentration of impurity in sample (µg/ml):	8.60E-01	2.23E-01
	Uncorrected weight of impurity in sample (µg):	99.76	28.32
	Weight of impurity in blank (µg):	14.00	3.65
	Minimum corrected weight of impurity in sample (µg):	85.77	24.67
	Maximum corrected weight of impurity in sample (µg):	85.77	24.67
Ti	Measured concentration of impurity in sample (µg/ml):	4.47E-02	4.50E-02
	Uncorrected weight of impurity in sample (µg):	5.19	5.72
	Weight of impurity in blank (µg):	< 1.20	< 1.01
	Minimum corrected weight of impurity in sample (µg):	3.99	4.71
	Maximum corrected weight of impurity in sample (µg):	5.19	5.72
V	Measured concentration of impurity in sample (µg/ml):	2.85E-01	5.71E-02
	Uncorrected weight of impurity in sample (µg):	33.06	7.25
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	32.76	7.00
	Maximum corrected weight of impurity in sample (µg):	33.06	7.25

Comments

Data checked against the official results of analyses for RMAL2594 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	182, 057, 092, 178, 156
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_07.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020505	L10021005	
Number of compacts:	5		
Total volume of leach solution (ml):	120.0	123.0	
Radiochemical laboratory analysis number:	2594-005	2594-010	
Measured uranium concentration (µg/ml):	8.80E-03	2.45E-03	
Uncertainty in uranium concentration (µg/ml):	8.80E-04	2.45E-04	
Weight uranium leached (g):	1.06E-06	3.01E-07	1.36E-06
Uncertainty in weight uranium leached (g):	1.06E-07	3.02E-08	1.10E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.94	< 5.07
	Weight of impurity in blank (µg):	< 6.18	< 5.19
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	4.94	5.07
	Measured concentration of impurity in sample (µg/ml):	9.12E-03	8.51E-03
	Uncorrected weight of impurity in sample (µg):	1.09	1.05
	Weight of impurity in blank (µg):	< 0.30	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	0.79	0.79
	Maximum corrected weight of impurity in sample (µg):	1.09	1.05
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.23
Co	Weight of impurity in blank (µg):	< 0.29	< 0.24
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.23
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.24	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.96	< 0.98
	Weight of impurity in blank (µg):	< 1.20	< 1.01
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.96	0.98
	Measured concentration of impurity in sample (µg/ml):	1.15E+00	8.76E-01
	Uncorrected weight of impurity in sample (µg):	138.00	107.75
	Weight of impurity in blank (µg):	63.60	65.27
Ti	Minimum corrected weight of impurity in sample (µg):	74.40	42.48
	Maximum corrected weight of impurity in sample (µg):	74.40	42.48
	Measured concentration of impurity in sample (µg/ml):	9.26E-01	2.02E-01
	Uncorrected weight of impurity in sample (µg):	111.12	24.85
V	Weight of impurity in blank (µg):	14.00	3.65
	Minimum corrected weight of impurity in sample (µg):	97.13	21.19
	Maximum corrected weight of impurity in sample (µg):	97.13	21.19
	Measured concentration of impurity in sample (µg/ml):	3.25E-02	4.27E-02
	Uncorrected weight of impurity in sample (µg):	3.90	5.25
	Weight of impurity in blank (µg):	< 1.20	< 1.01
	Minimum corrected weight of impurity in sample (µg):	2.70	4.24
	Maximum corrected weight of impurity in sample (µg):	3.90	5.25
	Measured concentration of impurity in sample (µg/ml):	2.58E-01	6.70E-02
	Uncorrected weight of impurity in sample (µg):	30.96	8.24
	Weight of impurity in blank (µg):	< 0.30	< 0.25
	Minimum corrected weight of impurity in sample (µg):	30.66	7.99
	Maximum corrected weight of impurity in sample (µg):	30.96	8.24

Comments

Data checked against the official results of analyses for RMAL2594 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO ₂ Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_07.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020501	L10021001	
Number of compacts:	None		
Total volume of leach solution (ml):	150.0	126.0	
Radiochemical laboratory analysis number:	2594-001	2594-006	
Measured uranium concentration (µg/ml):	<2.00E-04	<2.00E-04	
Uncertainty in uranium concentration (µg/ml):			
Weight uranium leached (g):	<3.00E-08	<2.52E-08	<5.52E-08
Uncertainty in weight uranium leached (g):			
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:			
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 6.18	< 5.19	<11.37
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.30	< 0.25	< 0.55
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.29	< 0.24	< 0.53
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.24	< 0.20	< 0.45
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 1.20	< 1.01	< 2.21
Ca	Measured concentration (µg/ml): 4.24E-01	5.18E-01	Ca
	Total weight of leached impurity (µg): 63.60	65.27	128.87
Al	Measured concentration (µg/ml): 9.33E-02	2.90E-02	Al
	Total weight of leached impurity (µg): 14.00	3.65	17.65
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 1.20	< 1.01	< 2.21
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.30	< 0.25	< 0.55

Comments

Data checked against the official results of analyses for RMA2594 by FCM on 3/01/2010.

Fred C. Montgomery
Operator

3-08-2010
Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	044, 010, 121, 054, 174
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_08.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020901	L10021601	
Number of compacts:	5		
Total volume of leach solution (ml):	118.0	126.0	
Radiochemical laboratory analysis number:	2611-001	2611-006	
Measured uranium concentration (µg/ml):	8.86E-03	2.33E-03	
Uncertainty in uranium concentration (µg/ml):	8.86E-04	2.33E-04	
Weight uranium leached (g):	1.05E-06	2.94E-07	1.34E-06
Uncertainty in weight uranium leached (g):	1.05E-07	2.94E-08	1.09E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.86	< 5.19
	Weight of impurity in blank (µg):	< 5.81	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	4.86	5.19
	Measured concentration of impurity in sample (µg/ml):	1.35E-02	6.36E-03
	Uncorrected weight of impurity in sample (µg):	1.59	0.80
	Weight of impurity in blank (µg):	< 0.28	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	1.31	0.56
	Maximum corrected weight of impurity in sample (µg):	1.59	0.80
	Measured concentration of impurity in sample (µg/ml):	5.92E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	0.70	< 0.24
Co	Weight of impurity in blank (µg):	< 0.27	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.43	0.00
	Maximum corrected weight of impurity in sample (µg):	0.70	0.24
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ca	Measured concentration of impurity in sample (µg/ml):	8.09E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	0.95	< 1.01
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.95	1.01
	Measured concentration of impurity in sample (µg/ml):	8.61E-01	3.37E-01
	Uncorrected weight of impurity in sample (µg):	101.60	42.46
	Weight of impurity in blank (µg):	103.92	18.94
Ti	Minimum corrected weight of impurity in sample (µg):	0.00	23.52
	Maximum corrected weight of impurity in sample (µg):	0.00	23.52
	Measured concentration of impurity in sample (µg/ml):	1.05E+00	2.22E-01
	Uncorrected weight of impurity in sample (µg):	123.90	27.97
V	Weight of impurity in blank (µg):	16.50	2.85
	Minimum corrected weight of impurity in sample (µg):	107.40	25.12
	Maximum corrected weight of impurity in sample (µg):	107.40	25.12
	Measured concentration of impurity in sample (µg/ml):	6.54E-02	3.97E-02
V	Uncorrected weight of impurity in sample (µg):	7.72	5.00
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	6.59	4.02
	Maximum corrected weight of impurity in sample (µg):	7.72	5.00
V	Measured concentration of impurity in sample (µg/ml):	2.92E-01	4.96E-02
	Uncorrected weight of impurity in sample (µg):	34.46	6.25
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	34.17	6.00
V	Maximum corrected weight of impurity in sample (µg):	34.46	6.25
	Measured concentration of impurity in sample (µg/ml):	2.92E-01	4.96E-02
	Uncorrected weight of impurity in sample (µg):	34.46	6.25
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	34.17	6.00
	Maximum corrected weight of impurity in sample (µg):	34.46	6.25

Comments

Data checked against the official results of analyses for RMAL2611 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO ₂ Fuel, from G73H-10-93085B
Compact ID numbers:	134, 047, 173, 003, 190
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_08.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020903	L10021603	
Number of compacts:	5		
Total volume of leach solution (ml):	118.0	119.0	
Radiochemical laboratory analysis number:	2611-003	2611-008	
Measured uranium concentration (µg/ml):	1.83E-01	1.46E+00	
Uncertainty in uranium concentration (µg/ml):	1.83E-02	1.46E-01	
Weight uranium leached (g):	2.16E-05	1.74E-04	1.95E-04
Uncertainty in weight uranium leached (g):	2.16E-06	1.74E-05	1.75E-05
Effective number of exposed kernels:	0.0	0.3	0.3
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.86	< 4.90
	Weight of impurity in blank (µg):	< 5.81	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	4.86	4.90
	Measured concentration of impurity in sample (µg/ml):	8.85E-03	8.65E-03
	Uncorrected weight of impurity in sample (µg):	1.04	1.03
	Weight of impurity in blank (µg):	< 0.28	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	0.76	0.78
	Maximum corrected weight of impurity in sample (µg):	1.04	1.03
	Measured concentration of impurity in sample (µg/ml):	7.40E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	0.87	< 0.23
Co	Weight of impurity in blank (µg):	< 0.27	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.60	0.00
	Maximum corrected weight of impurity in sample (µg):	0.87	0.23
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.19
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.19
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.94	< 0.95
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.94	0.95
	Measured concentration of impurity in sample (µg/ml):	2.98E+00	2.34E-01
	Uncorrected weight of impurity in sample (µg):	351.64	27.85
	Weight of impurity in blank (µg):	103.92	18.94
Ti	Minimum corrected weight of impurity in sample (µg):	247.72	8.90
	Maximum corrected weight of impurity in sample (µg):	247.72	8.90
	Measured concentration of impurity in sample (µg/ml):	8.78E-01	2.42E-01
	Uncorrected weight of impurity in sample (µg):	103.60	28.80
V	Weight of impurity in blank (µg):	16.50	2.85
	Minimum corrected weight of impurity in sample (µg):	87.11	25.94
	Maximum corrected weight of impurity in sample (µg):	87.11	25.94
	Measured concentration of impurity in sample (µg/ml):	3.45E-02	4.08E-02
V	Uncorrected weight of impurity in sample (µg):	4.07	4.86
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	2.94	3.87
	Maximum corrected weight of impurity in sample (µg):	4.07	4.86
V	Measured concentration of impurity in sample (µg/ml):	2.56E-01	6.17E-02
	Uncorrected weight of impurity in sample (µg):	30.21	7.34
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	29.93	7.10
V	Maximum corrected weight of impurity in sample (µg):	30.21	7.34
	Measured concentration of impurity in sample (µg/ml):	2.56E-01	6.17E-02
	Uncorrected weight of impurity in sample (µg):	30.21	7.34
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	29.93	7.10
	Maximum corrected weight of impurity in sample (µg):	30.21	7.34

Comments

Data checked against the official results of analyses for RMAL2611 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	129, 128, 155, 052, 077
DRF filename:	\\unc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_08.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020904	L10021604	
Number of compacts:	5		
Total volume of leach solution (ml):	123.0	130.0	
Radiochemical laboratory analysis number:	2611-004	2611-009	
Measured uranium concentration (µg/ml):	9.52E-03	2.55E-03	
Uncertainty in uranium concentration (µg/ml):	9.52E-04	2.55E-04	
Weight uranium leached (g):	1.17E-06	3.32E-07	1.50E-06
Uncertainty in weight uranium leached (g):	1.17E-07	3.32E-08	1.22E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 5.07	< 5.36
	Weight of impurity in blank (µg):	< 5.81	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	5.07	5.36
	Measured concentration of impurity in sample (µg/ml):	9.62E-03	7.79E-03
	Uncorrected weight of impurity in sample (µg):	1.18	1.01
	Weight of impurity in blank (µg):	< 0.28	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	0.90	0.77
	Maximum corrected weight of impurity in sample (µg):	1.18	1.01
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.23	< 0.25
Co	Weight of impurity in blank (µg):	< 0.27	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.23	0.25
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.20	< 0.21
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.20	0.21
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.98	< 1.04
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.98	1.04
	Measured concentration of impurity in sample (µg/ml):	6.57E-01	3.66E-01
	Uncorrected weight of impurity in sample (µg):	80.81	47.58
	Weight of impurity in blank (µg):	103.92	18.94
Ti	Minimum corrected weight of impurity in sample (µg):	0.00	28.64
	Maximum corrected weight of impurity in sample (µg):	0.00	28.64
	Measured concentration of impurity in sample (µg/ml):	8.06E-01	2.34E-01
	Uncorrected weight of impurity in sample (µg):	99.14	30.42
V	Weight of impurity in blank (µg):	16.50	2.85
	Minimum corrected weight of impurity in sample (µg):	82.64	27.57
	Maximum corrected weight of impurity in sample (µg):	82.64	27.57
	Measured concentration of impurity in sample (µg/ml):	3.90E-02	3.93E-02
	Uncorrected weight of impurity in sample (µg):	4.80	5.11
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	3.67	4.13
	Maximum corrected weight of impurity in sample (µg):	4.80	5.11
	Measured concentration of impurity in sample (µg/ml):	2.81E-01	6.08E-02
	Uncorrected weight of impurity in sample (µg):	34.56	7.90
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	34.28	7.66
	Maximum corrected weight of impurity in sample (µg):	34.56	7.90

Comments

Data checked against the official results of analyses for RMAL2611 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	111, 060, 146, 179, 051
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_08.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020905	L10021605	
Number of compacts:	5		
Total volume of leach solution (ml):	116.0	123.0	
Radiochemical laboratory analysis number:	2611-005	2611-010	
Measured uranium concentration (µg/ml):	8.84E-03	2.67E-03	
Uncertainty in uranium concentration (µg/ml):	8.84E-04	2.67E-04	
Weight uranium leached (g):	1.03E-06	3.28E-07	1.35E-06
Uncertainty in weight uranium leached (g):	1.03E-07	3.29E-08	1.08E-07
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:	0.0	0.0	0.0
Fe	Measured concentration of impurity in sample (µg/ml):	< 4.12E-02	< 4.12E-02
	Uncorrected weight of impurity in sample (µg):	< 4.78	< 5.07
	Weight of impurity in blank (µg):	< 5.81	< 5.07
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Cr	Maximum corrected weight of impurity in sample (µg):	4.78	5.07
	Measured concentration of impurity in sample (µg/ml):	1.14E-02	8.70E-03
	Uncorrected weight of impurity in sample (µg):	1.32	1.07
	Weight of impurity in blank (µg):	< 0.28	< 0.25
Mn	Minimum corrected weight of impurity in sample (µg):	1.04	0.82
	Maximum corrected weight of impurity in sample (µg):	1.32	1.07
	Measured concentration of impurity in sample (µg/ml):	< 1.91E-03	< 1.91E-03
	Uncorrected weight of impurity in sample (µg):	< 0.22	< 0.23
Co	Weight of impurity in blank (µg):	< 0.27	< 0.23
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.22	0.23
	Measured concentration of impurity in sample (µg/ml):	< 1.62E-03	< 1.62E-03
Ni	Uncorrected weight of impurity in sample (µg):	< 0.19	< 0.20
	Weight of impurity in blank (µg):	< 0.23	< 0.20
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
	Maximum corrected weight of impurity in sample (µg):	0.19	0.20
Ca	Measured concentration of impurity in sample (µg/ml):	< 8.00E-03	< 8.00E-03
	Uncorrected weight of impurity in sample (µg):	< 0.93	< 0.98
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	0.00	0.00
Al	Maximum corrected weight of impurity in sample (µg):	0.93	0.98
	Measured concentration of impurity in sample (µg/ml):	8.76E-01	1.89E-01
	Uncorrected weight of impurity in sample (µg):	101.62	23.25
	Weight of impurity in blank (µg):	103.92	18.94
Ti	Minimum corrected weight of impurity in sample (µg):	0.00	4.31
	Maximum corrected weight of impurity in sample (µg):	0.00	4.31
	Measured concentration of impurity in sample (µg/ml):	8.39E-01	1.93E-01
	Uncorrected weight of impurity in sample (µg):	97.32	23.74
V	Weight of impurity in blank (µg):	16.50	2.85
	Minimum corrected weight of impurity in sample (µg):	80.83	20.89
	Maximum corrected weight of impurity in sample (µg):	80.83	20.89
	Measured concentration of impurity in sample (µg/ml):	3.99E-02	3.88E-02
	Uncorrected weight of impurity in sample (µg):	4.63	4.77
	Weight of impurity in blank (µg):	< 1.13	< 0.98
	Minimum corrected weight of impurity in sample (µg):	3.50	3.79
	Maximum corrected weight of impurity in sample (µg):	4.63	4.77
	Measured concentration of impurity in sample (µg/ml):	2.90E-01	6.25E-02
	Uncorrected weight of impurity in sample (µg):	33.64	7.69
	Weight of impurity in blank (µg):	< 0.28	< 0.25
	Minimum corrected weight of impurity in sample (µg):	33.36	7.44
	Maximum corrected weight of impurity in sample (µg):	33.64	7.69

Comments

Data checked against the official results of analyses for RMAL2611 by FCM on 3/01/2010.

Fred C. Montgomery

Operator

3-08-2010

Date

Data Report Form DRF-26A: Measurement of U Contamination or Impurities by Deconsolidation Leach

Procedure:	AGR-CHAR-DAM-26 Rev. 1
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	Deconsolidation Leach Blank
DRF filename:	\\mc-agr\AGR\LeachBurnLeach\LEU11-OP2-Z_DRF26R1_08.xls

Mean average weight uranium per particle (g):	6.39E-04
Uncertainty in mean average weight uranium per particle (g):	7.00E-07

	First Leach	Second Leach	Total
Deconsolidation-leach solution ID:	L10020902	L10021602	
Number of compacts:	None		
Total volume of leach solution (ml):	141.0	123.0	
Radiochemical laboratory analysis number:	2611-002	2611-007	
Measured uranium concentration (µg/ml):	<2.00E-04	<2.00E-04	
Uncertainty in uranium concentration (µg/ml):			
Weight uranium leached (g):	<2.82E-08	<2.46E-08	<5.28E-08
Uncertainty in weight uranium leached (g):			
Effective number of exposed kernels:	0.0	0.0	0.0
Uncertainty in effective number of exposed kernels:			
Fe	Measured concentration (µg/ml): < 4.12E-02	< 4.12E-02	Fe
	Total weight of leached impurity (µg): < 5.81	< 5.07	<10.88
Cr	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	Cr
	Total weight of leached impurity (µg): < 0.28	< 0.25	< 0.53
Mn	Measured concentration (µg/ml): < 1.91E-03	< 1.91E-03	Mn
	Total weight of leached impurity (µg): < 0.27	< 0.23	< 0.50
Co	Measured concentration (µg/ml): < 1.62E-03	< 1.62E-03	Co
	Total weight of leached impurity (µg): < 0.23	< 0.20	< 0.43
Ni	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ni
	Total weight of leached impurity (µg): < 1.13	< 0.98	< 2.11
Ca	Measured concentration (µg/ml): 7.37E-01	1.54E-01	Ca
	Total weight of leached impurity (µg): 103.92	18.94	122.86
Al	Measured concentration (µg/ml): 1.17E-01	2.32E-02	Al
	Total weight of leached impurity (µg): 16.50	2.85	19.35
Ti	Measured concentration (µg/ml): < 8.00E-03	< 8.00E-03	Ti
	Total weight of leached impurity (µg): < 1.13	< 0.98	< 2.11
V	Measured concentration (µg/ml): < 2.00E-03	< 2.00E-03	V
	Total weight of leached impurity (µg): < 0.28	< 0.25	< 0.53

Comments

Data checked against the official results of analyses for RMAL2611 by FCM on 3/01/2010.

Fred C. Montgomery
Operator

3-08-2010
Date

Data Report Form DRF-27: Counting of Particles with a Defective OPyC Layer from Deconsolidated Compacts by Visual Inspection

Procedure:	AGR-CHAR-DAM-27 Rev. 0
Operator:	Fred Montgomery
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID number:	132
DRF filename:	\\mc-agr\AGR\DefectiveOPyC\LEU11-OP2-Z_DRF27R0.xls

Number of particles with cracked OPyC:	0
Number of particles with partially missing OPyC:	0
Number of particles with completely missing OPyC:	0
Total number of particles with defective OPyC:	0

Comments on unusual visual characteristics of OPyC

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<i>Fred C. Montgomery</i> Operator	11-17-09 Date
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Data Report Form DRF-28: Counting of Particles with Excessive Uranium Dispersion Inside SiC

Procedure:	AGR-CHAR-DAM-28 Rev. 2
Operator:	John Hunn/Ivan Dunbar/Paul Menchhofer/Chinthaka Silva
Compact lot ID:	LEU11-OP2-Z
Compact lot description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B
Compact ID numbers:	043 202 168 112 033 145 027 105 119 167 137 064 175 009 195 148 149 035 048 038 200 037 153 157 012 109 011 124 070 056 158 031 095 041 154 004 166 040 067 142
DRF filename:	\\mc-agr\AGR\DefectiveIPyC\LEU11-OP2-Z_DRF28R2.xls

Number of compacts from which particles were recovered:	40
Weight of sample of particles (g):	76.985
Number of particles in sample:	61710
Mean average weight/particle (g):	1.248E-03
Number of particles with excessive U dispersion:	1

Comments

A 1/61710 defective IPyC coating fraction corresponds to $<7.7\text{e-}5$ at 95% confidence. Five other particles with minor uranium dispersion were also observed, but not counted as defects according to the visual standard used in this analysis procedure. These particles showed small, isolated spots around the Buffer/IPyC interface. Six other anomalous particles showed features in the x-ray images that looked similar to uranium dispersion, but further analysis indicated that this was most likely due to metallic contamination on the kernel surface. High density inclusions at the kernel surface could be seen by x-ray, with some indication of diffusion of the impurity out into the buffer. Analysis of this contamination showed the presence of Fe and Cr. This metallic contamination could lead to failure of the SiC during irradiation, but is not related to defective IPyC.

A number of particles were seen with small portions missing from the kernel and associated irregularity in the kernel shape. One particles was seen with a SiC layer that were about 25 μm thick.

	3-12-10
Operator	Date

For Information Only

The information in the remainder of this section is from additional characterization that was not required by the fuel product specification.

Anisotropy of pyrocarbon layers after compacting

To examine the change in pyrocarbon anisotropy during compact fabrication, particles were recovered after deconsolidation of the particles from the compact for defective OPyC analysis. After compacting, the anisotropy of the pyrocarbon layers was observed to increase. This increase occurs during the heat treatment of the compacts at 1800°C for 1 hour. The diattenuation of the IPyC increased from 0.0111 ± 0.0009 to 0.0157 ± 0.0012 (1.0334 ± 0.0027 to 1.0471 ± 0.0036 in terms of effective BA_{Fo}). The diattenuation of the OPyC increased from 0.0073 ± 0.0004 to 0.0122 ± 0.0005 (1.0219 ± 0.0012 to 1.0365 ± 0.0016 in terms of effective BA_{Fo}). The following data report forms contain the data for these measurements.

Data Report Form DRF-18A: Measurement of Pyrocarbon Anisotropy using the 2-MGEM - IPyC

Procedure:	AGR-CHAR-DAM-18 Rev. 1
Operator:	G. E. Jellison
Mount ID:	M09120301
Sample ID:	LEU11-OP2-Z132
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B, after compacting
Folder containing data:	\\mc-agr\AGR\2-MGEM\R09121401\

Particle #	Grid Position	Diattenuation			Equivalent BAFO = 1+3N		
		Average	St. Dev.	Ave. Error	Average	St. Dev.	Ave. Error
1	4,4	0.0171	0.0030	0.0005	1.0513	0.0090	0.0015
2	4,5	0.0157	0.0025	0.0006	1.0471	0.0075	0.0018
3	4,6	0.0142	0.0023	0.0005	1.0426	0.0069	0.0015
4	5,4	0.0159	0.0028	0.0005	1.0477	0.0084	0.0015
5	5,5	0.0143	0.0024	0.0006	1.0429	0.0072	0.0018
6	5,6	0.0177	0.0025	0.0006	1.0531	0.0075	0.0018
7	6,4	0.0148	0.0022	0.0006	1.0444	0.0066	0.0018
8	6,5	0.0156	0.0025	0.0006	1.0468	0.0075	0.0018
9	6,6	0.0149	0.0025	0.0007	1.0447	0.0075	0.0021
10	5,7	0.0167	0.0027	0.0007	1.0501	0.0081	0.0021
Average		0.0157	0.0025	0.0006	1.0471	0.0076	0.0018

Mean of average BAFO per particle:	1.0471
Standard deviation of average BAFO per particle:	0.0036

Comments

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G. E. Jellison
Operator

12/16/09
Date

Data Report Form DRF-18B: Measurement of Pyrocarbon Anisotropy using the 2-MGEM - OPyC

Procedure:	AGR-CHAR-DAM-18 Rev. 1
Operator:	G. E. Jellison
Mount ID:	M09120301
Sample ID:	LEU11-OP2-Z132
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B, after compacting
Folder containing data:	\\mc-agr\AGR\2-MGEM\R09121401\

Particle #	Grid Position	Diattenuation			Equivalent BAFO = 1+3N		
		Average	St. Dev.	Ave. Error	Average	St. Dev.	Ave. Error
1	4,4	0.0123	0.0035	0.0006	1.0369	0.0105	0.0018
2	4,5	0.0113	0.0020	0.0006	1.0339	0.0060	0.0018
3	4,6	0.0115	0.0029	0.0005	1.0345	0.0087	0.0015
4	5,4	0.0128	0.0024	0.0006	1.0384	0.0072	0.0018
5	5,5	0.0124	0.0025	0.0007	1.0372	0.0075	0.0021
6	5,6	0.0122	0.0034	0.0007	1.0366	0.0102	0.0021
7	6,4	0.0120	0.0022	0.0007	1.0360	0.0066	0.0021
8	6,5	0.0117	0.0026	0.0007	1.0351	0.0078	0.0021
9	6,6	0.0125	0.0025	0.0007	1.0375	0.0075	0.0021
10	5,7	0.0128	0.0028	0.0008	1.0384	0.0084	0.0024
Average		0.0122	0.0027	0.0007	1.0365	0.0080	0.0020

Mean of average BAFO per particle:	1.0365
Standard deviation of average BAFO per particle:	0.0016

Comments

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G. E. Jellison
Operator

12/16/09
Date

Data Report Form DRF-18A: Measurement of Pyrocarbon Anisotropy using the 2-MGEM - IPyC

Procedure:	AGR-CHAR-DAM-18 Rev. 1
Operator:	G. E. Jellison
Mount ID:	M09120301
Sample ID:	LEU11-OP2-Z132
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B, after compacting
Folder containing data:	\\mc-agr\AGR\2-MGEM\R09121401\

Particle #	Grid Position	Diattenuation			True BA _{Fo} = (1+N)/(1-N)		
		Average	St. Dev.	Ave. Error	Average	St. Dev.	Ave. Error
1	4,4	0.0171	0.0030	0.0005	1.0348	0.0062	0.0010
2	4,5	0.0157	0.0025	0.0006	1.0319	0.0052	0.0012
3	4,6	0.0142	0.0023	0.0005	1.0288	0.0047	0.0010
4	5,4	0.0159	0.0028	0.0005	1.0323	0.0058	0.0010
5	5,5	0.0143	0.0024	0.0006	1.0290	0.0049	0.0012
6	5,6	0.0177	0.0025	0.0006	1.0360	0.0052	0.0012
7	6,4	0.0148	0.0022	0.0006	1.0300	0.0045	0.0012
8	6,5	0.0156	0.0025	0.0006	1.0317	0.0052	0.0012
9	6,6	0.0149	0.0025	0.0007	1.0303	0.0052	0.0014
10	5,7	0.0167	0.0027	0.0007	1.0340	0.0056	0.0014
Average		0.0157	0.0025	0.0006	1.0319	0.0052	0.0012

Mean of average BA _{Fo} per particle:	1.0319
Standard deviation of average BA _{Fo} per particle:	0.0025

Comments

<i>A. E. Jellison</i> Operator	<i>12/14/09</i> Date
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Data Report Form DRF-18B: Measurement of Pyrocarbon Anisotropy using the 2-MGEM - OPyC

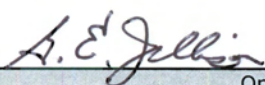
Procedure:	AGR-CHAR-DAM-18 Rev. 1
Operator:	G. E. Jellison
Mount ID:	M09120301
Sample ID:	LEU11-OP2-Z132
Sample Description:	AGR-2 B&W UO2 Fuel, from G73H-10-93085B, after compacting
Folder containing data:	\\mc-agr\AGR\2-MGEM\R09121401\

Particle #	Grid Position	Diattenuation			True BA _{Fo} = (1+N)/(1-N)		
		Average	St. Dev.	Ave. Error	Average	St. Dev.	Ave. Error
1	4,4	0.0123	0.0035	0.0006	1.0249	0.0072	0.0012
2	4,5	0.0113	0.0020	0.0006	1.0229	0.0041	0.0012
3	4,6	0.0115	0.0029	0.0005	1.0233	0.0059	0.0010
4	5,4	0.0128	0.0024	0.0006	1.0259	0.0049	0.0012
5	5,5	0.0124	0.0025	0.0007	1.0251	0.0051	0.0014
6	5,6	0.0122	0.0034	0.0007	1.0247	0.0070	0.0014
7	6,4	0.0120	0.0022	0.0007	1.0243	0.0045	0.0014
8	6,5	0.0117	0.0026	0.0007	1.0237	0.0053	0.0014
9	6,6	0.0125	0.0025	0.0007	1.0253	0.0051	0.0014
10	5,7	0.0128	0.0028	0.0008	1.0259	0.0057	0.0016
Average		0.0122	0.0027	0.0007	1.0246	0.0055	0.0014

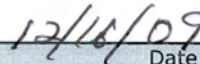
Mean of average BA _{Fo} per particle:	1.0246
Standard deviation of average BA _{Fo} per particle:	0.0011

Comments

--



Operator



Date

Appendix A: Certificate of Conformance

This section contains the Certificate of Conformance for the LEU11-OP2-Z compact lot, This is a record of the review by Quality Assurance personnel that specified requirements have been met or that nonconformances to those requirements have been documented. Appendix B contains copies of the applicable Nonconformance Reports.

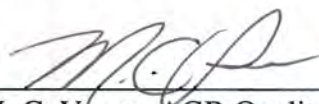
Oak Ridge National Laboratory
Advanced Gas Reactor Fuel Development and Qualification Program
CERTIFICATE OF CONFORMANCE

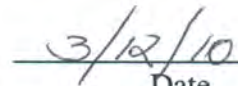
- 1. ITEM IDENTIFICATION:** AGR Fuel Compacts OP2 MK 4/22/10
2. PART LOT AND LOT NUMBER: AGR-2 B&W UO₂ Fuel Compacts, LEU11-OP1-Z
3. PRODUCT DEFINITION: INL Document #SPC-923, Revision 3 entitled *AGR-2 Fuel Specification*
4. LIST OF APPROVED DEVIATIONS: Not applicable

*Part Type	Unique Part I.D. No.	QTY	INIT.	Date	*Part Type	Unique Part I.D. No.	QTY	INIT.	Date
FC	001	1			FC	140	1		
FC	018	1			FC	147	1		
FC	029	1			FC	150	1		
FC	032	1			FC	152	1		
FC	034	1			FC	180	1		
FC	036	1			FC	181	1		
FC	045	1			FC	183	1		
FC	062	1			FC	186	1		
FC	065	1			FC	188	1		
FC	066	1			FC	193	1		
FC	072	1			FC	197	1		
FC	074	1			FC	198	1		
FC	075	1			FC		1		
FC	078	1			FC		1		
FC	079	1			FC		1		
FC	085	1			FC		1		
FC	089	1			FC		1		
FC	091	1			FC		1		
FC	098	1			FC		1		
FC	101	1			FC		1		
FC	106	1			FC		1		
FC	127	1			FC		1		
FC	133	1			FC		1		
FC	136	1			FC		1		

5. LIST OF APPLICABLE NONCONFORMANCE REPORT NUMBERS (NCRs attached in Appendix B of data package): INL NCR 44791

With the exception of the Deviations documented on the forms referenced in Item 4 and the nonconforming conditions documented on Nonconformance Reports referenced in Item 5, the listed parts have been produced and tested in compliance to the requirements of the QAP for the AGR Program at ORNL (Document # QAP-ORNL-AGR-01), its subordinate implementing procedures, and to the specified product definition prescribed in the document(s) referenced in Item 3.


M. C. Vance, AGR Quality Representative,
Materials Science and Technology Division, ORNL


Date

* FC indicates fuel compact

Appendix B: Nonconformance Reports

This section contains the applicable Nonconformance Reports for the LEU11-OP2-Z compact lot. A nonconformance related to a higher than allowed fraction of exposed uranium was determined by the program to be acceptable for the AGR-2 irradiation test. The final disposition of this compact lot was to use as is for the AGR-2 irradiation test. This disposition was documented on INL NCR-44791.

230.01
Revision date
09/30/2003

Control of Nonconforming Items

Nonconformance Documentation

Initiator:
Barnes, Charles M

S Number:
059914

Work Org.:
C700

Work Phone:
6-0864

Documentation

NCR Number: 44791	Date Identified: 08/04/2009	*SSC: AGR-2 compacts and coated particles	*Facility: OFF-S *Location: ORNL Description: Bldg 4508 and possibly other ORNL buildings
*Item Name: LEU06 compacts containing B&W G73J-14-93074A particles and other AGR-2 compact lots (LEU07 and possibly LEU09 and/or LEU11) containing B&W AGR-2 particles		Req. No/P.O. No./SC and/or Project No.: Project #23841; Contract #27240 with B&W for industrial fuel fabrication and development; Contract 59613 with ORNL which includes AGR compact fabrication and characterization	
Supplier Name/Address: Supplier of AGR-2 particles is Babcock & Wilcox Co., 1570 Mt. Athos Road, Lynchburg, VA 24504		*This NCR is for: <input type="checkbox"/> ICP <input checked="" type="checkbox"/> INL <input type="checkbox"/> Other	
*Is the non-conformance under the requirement of SNF or NRC-licensed activities (DOE/RW-0333P)? <input type="radio"/> Yes <input checked="" type="radio"/> No			
*Specification to which item does not perform: SPC-923, Rev. 2 AGR-2 Fuel Specification (in effect when AGR-2 UCO particle data package was submitted by B&W) and SPC-923, Rev 3 (in effect when LEU06 and other AGR-2 compacts were characterized)			
Associated Documents: Data Packages for LEU06, LEU07, LEU09 and LEU11 compacts (not issued at this time); B&W Data Packages for AGR-2 UCO particles, lots G73J-14-93071A, G73J-14-93072A, G73J-14-93073A, G73J-14-93074A & G73H-10-93085B; TCT meeting notes of March 2 & 5 teleconferences, March 16 & 18 teleconferences, and April 2 teleconference			
*Non-Conformance Description: LEU06 compacts were found to contain uranium contamination at approximately 10-4 g exposed U per gram total U in compacts, compared to the specification of $\leq 2 \times 10^{-5}$ g exposed U per g U in compacts. Exposed uranium in compacts was determined to be caused by cracks through all layers of the coatings of a fraction of particles contained in these compacts. Based on several teleconferences of the VHTR TDO Fuels Technical Coordination Team (held on March 2, 5, 16, 18 and April 2), it was recommended that LEU06 compacts not be used in the AGR-2 experiment because of the high uranium contamination but replaced by a new set of compacts containing G73J-14-93073A particles. This replacement batch of compacts is expected to have a lower fraction of uranium contamination (44% of the LEU06 fraction based on all leach and burn leach results and 95% confidence values or 33% based on all leach and burn leach results and 50% confidence values). LEU07 compacts were also found to have uranium contamination above the specification limit, although for a separate reason (uranium dispersion), LEU07 compacts have been rejected for use in the AGR-2 experiment. The actual uranium contamination values for LEU06 compacts are $\leq 1.4 \times 10^{-4}$ (95% confidence based on analysis of 40 compacts only) for LEU06 and $\leq 6.9 \times 10^{-5}$ (95% confidence based on analysis of 100 compacts) for LEU07 compacts. The expected value for LEU09 compacts is 5×10^{-5} (95% confidence), based on measurements of defect fractions of 217,000 particles from batch 93073A.			
*Responsible Manager (RM): Cox, John R Alternate RM for processing NCR: Croson, Diane V		*Responsible Quality Engineer (QE): Roberts, Gary D	

Next Activity: Implementation Completion - RM

Actionee: Croson, Diane V

Date Due:

Screening - Responsible Manager

Responsible Manager (RM): Croson, Diane V	Organization C700	Phone: 6-3402	Date Screened: 12/08/2009
--	----------------------	------------------	------------------------------

*Initiator has selected "No" to the non-conformance under the requirement of SNF or NRC-licensed activities

(DOE/RW-0333P). Is this Correct?

☒ Yes ☐ No

*Does the NCR require Stop Work?

☐ Yes ☒ No*Does this NCR support Environmental Requirements? ☐ Yes ☒ No

RM Comments:

None

RM Change History:

12/08/2009 07:26 AM : Angela J Smith changed the RM from Cox, John R to Croson, Diane V

Screening - Quality Engineer

Quality Engineer (QE): Roberts, Gary D	Organization W560	Phone: 6-8961	Date Screened: 12/08/2009
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*Is the NCR valid? ☒ Yes ☐ No

Quality Comments:

None

Notification - RM

Responsible Manager (RM): Croson, Diane V	Organization C700	Phone: 6-3402	Date Notified: 12/08/2009
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ORPS Report Number:

N/A

*Is the NCR operational equipment needed for Conditional Use?

☐ Yes ☒ No

*Area of Responsibility:

INL NGNP

Optional Internal Area of Responsibility:

Cognizant Director:

Soto, Rafael

Cognizant Director's Alternate(s):

Smith, Angela J; Armour, Kimberly Jo

*Facility Manager:

Petti, David A

Compliance Coordinator(s) to determine Price Anderson (PAAA) noncompliance:

Smith, Angela J

*Does the non-conformance involve suspect/counterfeit items?

☐ Yes ☒ No*Does this NCR pertain to Waste Containers, Waste Packaging, or Packaging and Transportation activities? ☐ Yes ☒ No

Method of Segregation:

Material is located at ORNL and is segregated from other fuel batches to prevent inadvertent use

Method of Identification:

Clearly label by batch number

*Lead Disposition Evaluator:

Barnes, Charles M

Additional Disposition Evaluator(s):

(These evaluators verify and concur the disposition of NCR.)

This block is intentionally left blank.

Additional Notification:

QE Red Tag Process

Quality Engineer (QE): Roberts, Gary D	Organization W560	Phone: 6-8961	Date Processed: 07/30/2009
---	----------------------	------------------	-------------------------------

Tagging Information/Other Methods:

Other means of Tag Identification:

Disposition

Lead Disposition Evaluator: Barnes, Charles M	Organization: C700	Phone: 6-0864	Date Disposition sent for approval: 12/08/2009
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*NCR Disposition:

☐ Use As Is ☐ Reject
☐ Repair ☒ Multiple Disposition
☐ Rework

*Multiple Disposition Documentation:

1. LEU06 and LEU07 compacts: Do not use for AGR-2 fuel because of high uranium contamination. However, because full characterization has been performed on these compacts and the kernels and coated particles that they contain, LEU06

compacts should be retained in storage at INL and ORNL for possible future uses. These uses include measurement of thermal conductivity or other compact properties, tests of PIE methods, and tests to better determine fuel specification limits. 2. LEU09 and LEU11 compacts: Use as is. See justification below.

*Does Disposition represent Design Change?

☐ Yes ☒ No

*Does this item require a Unreviewed Safety Question (USQ) screening and evaluation?

☐ Yes ☒ No

Identify as-built drawings and other documentation: (*For Use-As-Is and Repair)

N/A

Method of Disposal: (*For Reject)

N/A

Technical Justification: (*For Use-As-Is and Repair)

Justification for use as is for LEU09 and LEU11 compacts: Uranium equivalent to 2 defective particles has been found in 60 LEU09 compacts; this level is low enough to permit use of these compacts in the AGR-2 experiment, although the level may not meet the fuel uranium contamination specification limit. The final determination of whether LEU09 compacts meet the uranium contamination specification will be made after analyses are complete of another 40 compacts. No uranium contamination has been found in the analysis of 40 LEU11 compacts. 60 additional LEU11 compacts are being analyzed. Past analyses of multiple sets of 20 compacts show very little variation in results from one set to the next because of the large number of particles in each set of 20 compacts.

Technical requirements and acceptance criteria to be used for repair work:

N/A

Inspections and Verification Criteria for acceptability of repair or rework:

N/A

Other Documents or QA records requiring the change:

N/A

If this nonconforming item is associated with, or caused by, a program, procedure, or process problem, document the issue in accordance with LWP-13840:

N/A

Disposition Concurrence/Approval

Approval RM(Signature) Croson, Diane V <i>Diane V Croson</i> 12/08/2009	Concurrence/Approval QE(Signature) Roberts, Gary D <i>Gary D Roberts</i> 12/08/2009	This block is intentionally left blank.	This block is intentionally left blank.
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Implementation Completion - RM

Responsible Manager (RM): Croson, Diane V	Organization C700	Phone: 6-3402	Date Completion:
--	----------------------	------------------	------------------

The Disposition as approved has been completed and implemented: ☐ Yes ☐ N/A

Implementing Documentation:

Attachments/Comments



PAAA 44791 (AGR-2 compacts).pdf

Revision History

12/08/2009 04:30 PM : Diane V Croson as an RM concurred the Disposition and signed off.
 12/08/2009 04:20 PM : Gary D Roberts as a QE concurred the Disposition and signed off.
 12/08/2009 02:37 PM : Charles M Barnes completed NCR Disposition and submitted to Croson, Diane V; Roberts, Gary D for their concurrence and approval.
 12/08/2009 07:52 AM : Diane V Croson completed Notification Process and notified Roberts, Gary D; Soto, Rafael; Smith, Angela J; Armour, Kimberly Jo; Smith, Angela J; Petti, David A; Barnes, Charles M
 12/08/2009 07:44 AM : Gary D Roberts completed screening and forwarded to Croson, Diane V for Notification process.
 12/08/2009 07:34 AM : Diane V Croson completed screening and forwarded to Roberts, Gary D for QE Screening.
 12/08/2009 07:26 AM : Angela J Smith changed the RM from Cox, John R to Croson, Diane V
 08/04/2009 03:26 PM : Charles M Barnes submitted NCR to RM Cox, John R for screening.

The following fields are general purpose public use. Any data entered here is not related to NCR process and solely used for one's individual need. Integrity of the data is not guaranteed since it can be replaced by any user randomly.

FIELD A:

(Field Name: FIELD A, type Text)

FIELD B:

(Field Name: FIELD B, type Text)

Appendix C: Upgrading of LEU10 using a Roller-micrometer

As discussed in section 3, LEU10 was a TRISO particle sample taken from coated particle batch G73H-10-93085B. The LEU10 particles were upgraded using a roller-micrometer and renamed LEU11. LEU11 was used to make the AGR-2 B&W UO₂ compact lot LEU11-OP2-Z.

The roller-micrometer technique uses rotating inclined cylinders with a diverging gap to sort particles according to their size. Using a vibrating vee-trough feeder, particles are fed in a single stream into the gap between the rollers. The rollers are angled downward away from the feed point and rotate with an upward and outward motion. Particles travel down the gradually widening gap until they reach a point equal to their width, at which point they drop through the gap into a series of collection bins. The roller-micrometer is a very accurate and reliable device for sorting coated particles by size. It also tends to sort coated particles by shape because the particles continuously re-orient as they travel down the inclined rollers, and faceted particles fall through a narrower gap than spherical particles of the same diameter. Figure C-1 shows the roller-micrometer equipment.

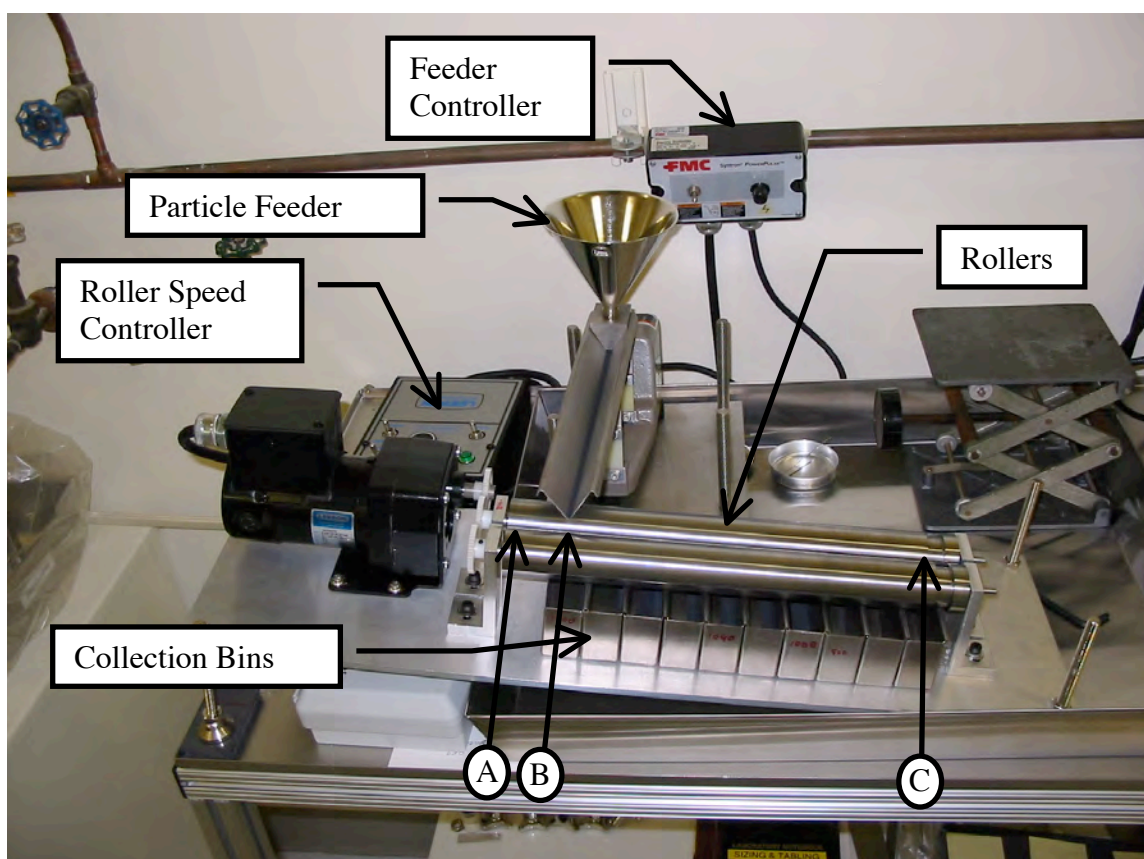


Figure C-1. Photograph of roller-micrometer equipment showing the arrangement of the roller, particle feeder, and collection bins.

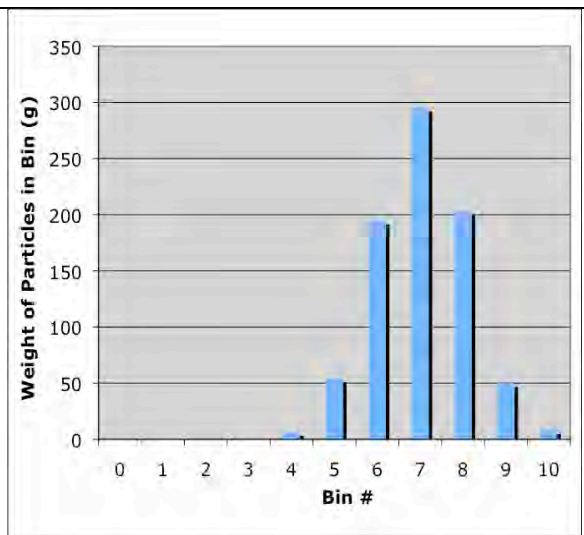
The roller gap was adjusted such that particles could be sorted into 11 bins numbered consecutively from 0 to 10. Each bin spanned a gap width variation of 25 μm , with Bin 0 at 750 -

775 μm and Bin 10 at 1000 μm and above. Table C-1 shows the distribution of the LEU10 particles after passing through the roller-micrometer. Six uncoated kernels were sorted into the first two bins, as well as some coating fragments (Figures C-2 through C-4). The presence of the coating fragments indicate that at least some of the failed coatings came off the kernels after previous upgrading at B&W by sieving and rolling on a shape sorting table, perhaps during shipment to ORNL. These uncoated kernels and coating fragments were set aside. Bin 3 contained 18 small or non-spherical particles (Figure C-5). These particles were also set aside. Bin 4 contained several thousand particles (about 0.8% of the total population), and some of these particles also exhibited non-spherical shapes (Figure C-6). These particles were not discarded for reasons discussed below. Note that there is also a weight loss reported in Table C-1 due to removal of carbon dust from the surface of the OPyC and a few particles that bounced off of the rollers during sorting.

Bins 4 - 10 were recombined and the upgraded composite was named LEU11. This decision was based on the fact that the purpose of the roller micrometer upgrading of LEU10 was to separate out and remove uncoated kernels, not to remove the tails of the particle size distribution. The selective removal of the 6 bare kernels and the 18 particles in Bin 3 is not expected to impact the results of previously performed sampling and acceptance testing of the kernels and coated particles that went into LEU10. However, further upgrading by removal of Bins 4 and 10 could change the mean properties of the composite to a degree where some of the previous QC data would no longer be relevant. In addition, there is no evidence that the particles in the tails of the roller-micrometer distribution will not perform adequately. Previous observation of undersized particles from a similar coating batch (G73H-10-93087) showed no indication of missing layers and the small diameter was most often related to a thin buffer or, in a few cases, a thin OPyC. Therefore, it was determined by the program that it was desirable to proceed with the irradiation testing of the coated particles as produced by the current B&W process that did not include roller-micrometer sorting.

Table C-1. Sorting of LEU10 by roller-micrometer

Collection Bin	Nominal Gap (μm)	Weight (g)
Bin 0	750 - 775	5 kernels
Bin 1	775 - 800	1 kernel
Bin 2	800 - 825	empty
Bin 3	825 - 850	0.0217
Bin 4	850 - 875	6.4331
Bin 5	875 - 900	53.9640
Bin 6	900 - 925	194.6683
Bin 7	925 - 950	295.5068
Bin 8	950 - 975	203.0499
Bin 9	975 - 1000	49.9721
Bin 10	1000 - open	8.1118
Total		811.7277
Loss		0.3035



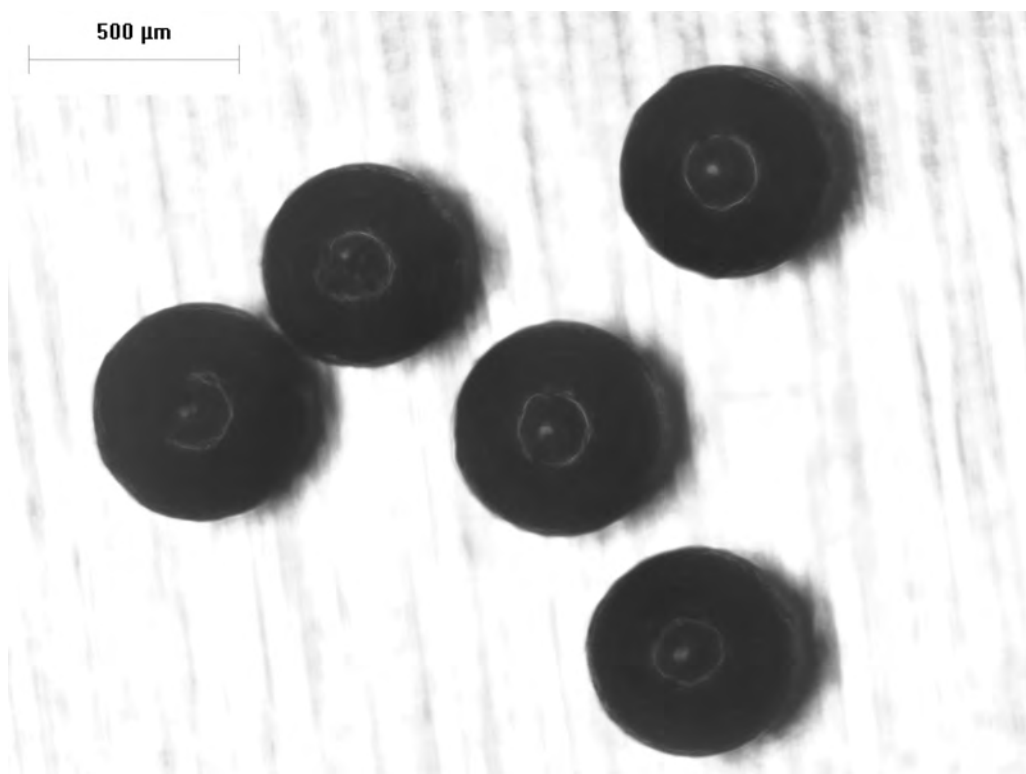


Figure C-2. Photograph of particles from Bin 0.

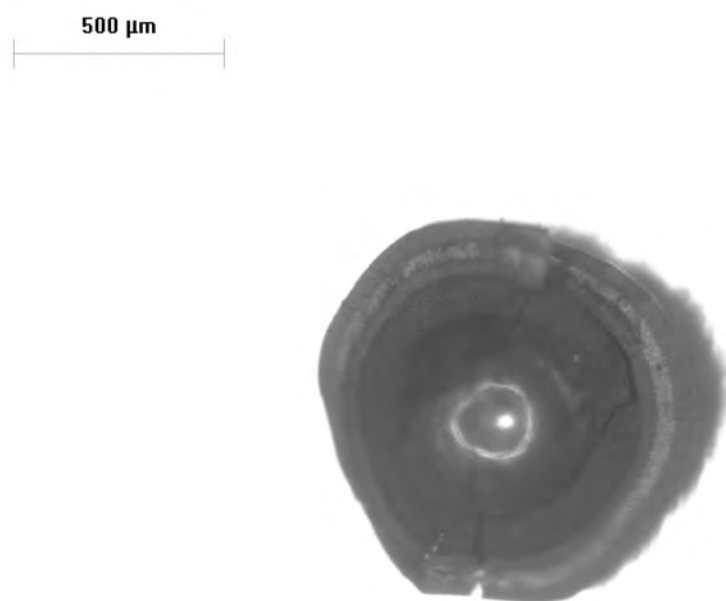


Figure C-3. Photograph of fragment from Bin 0.

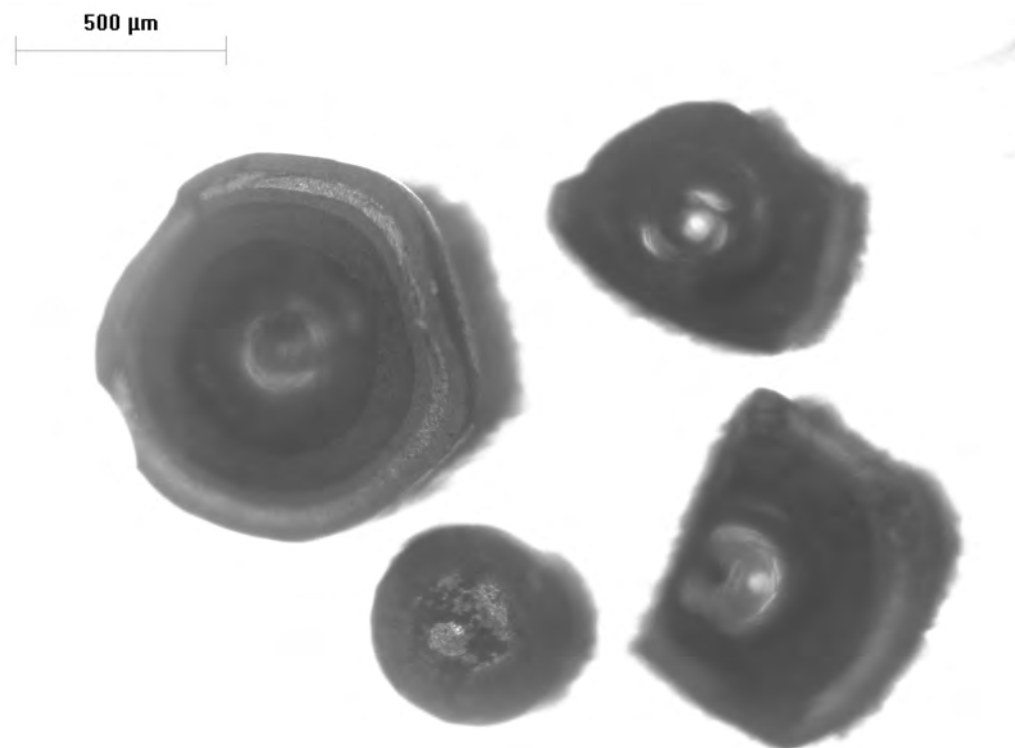


Figure C-4. Photograph of fragments from Bin 1.



Figure C-5. Photograph of particles from Bin 3.

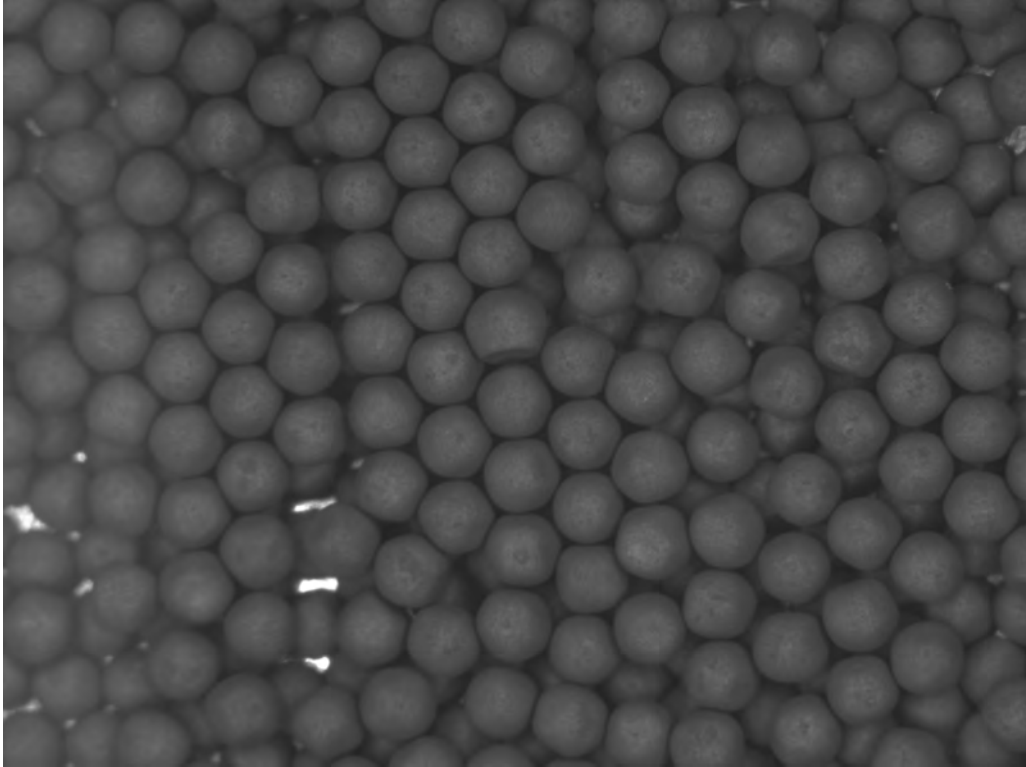


Figure C-6. Photograph of particles from Bin 4.